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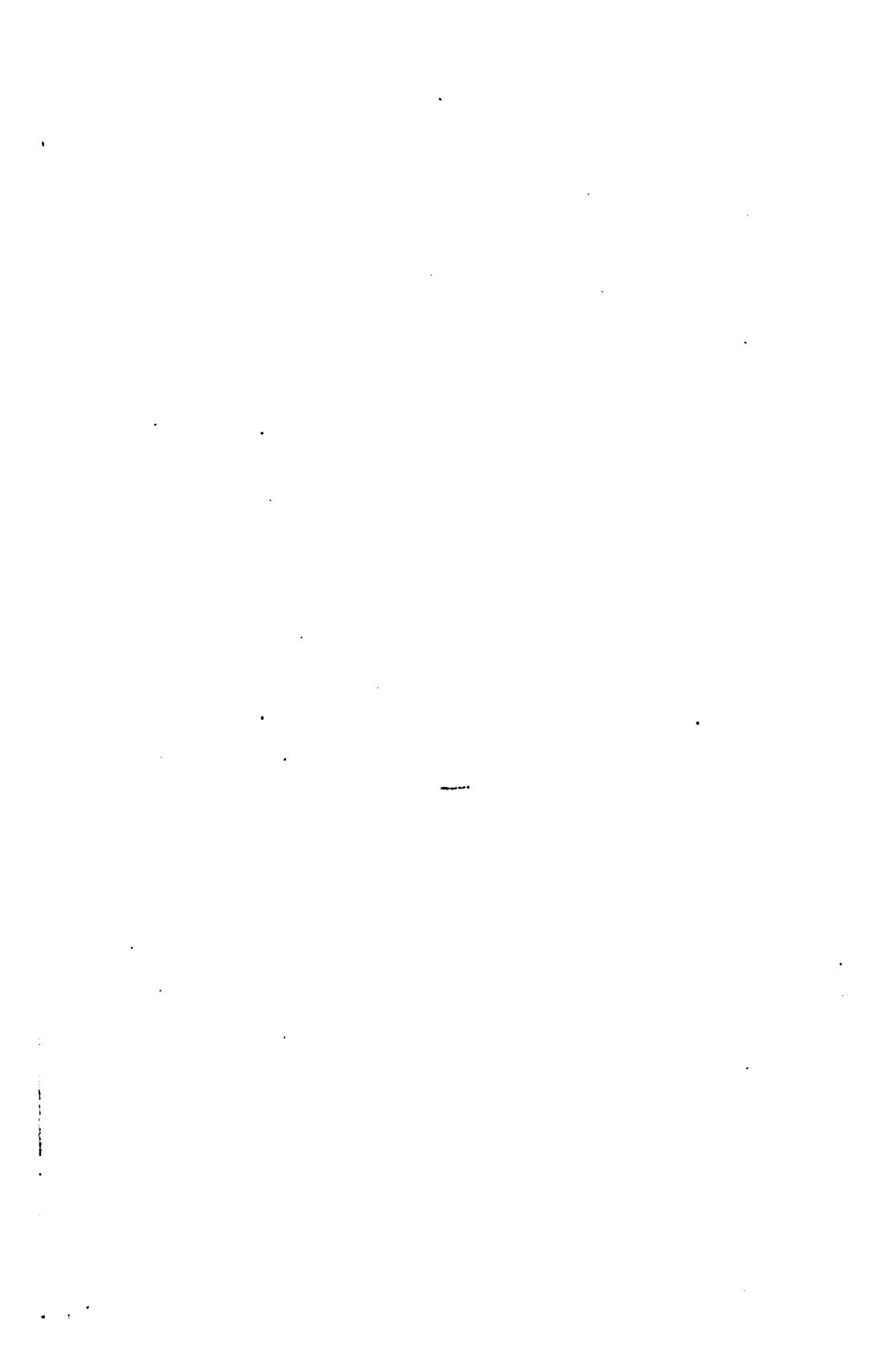


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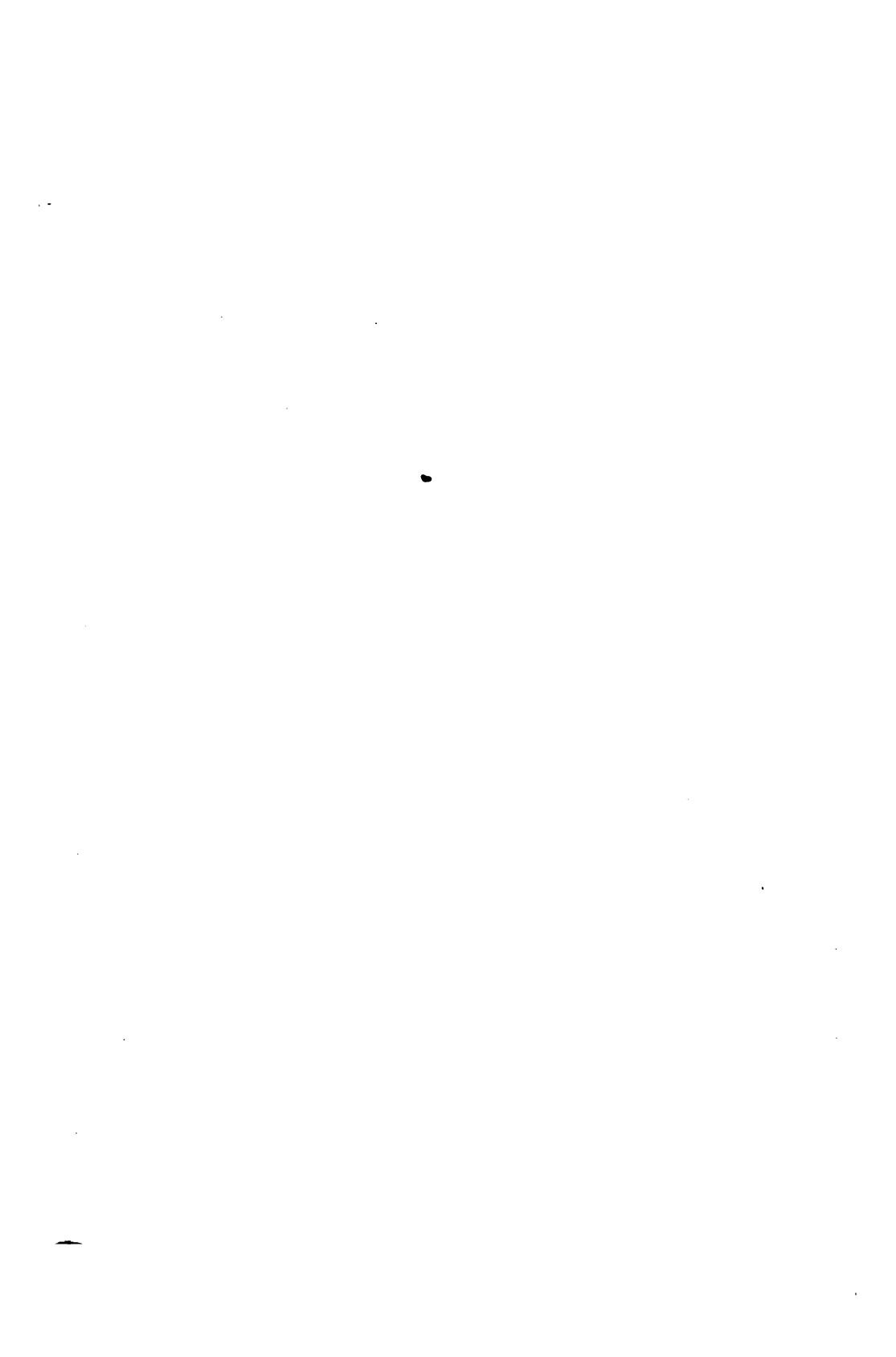
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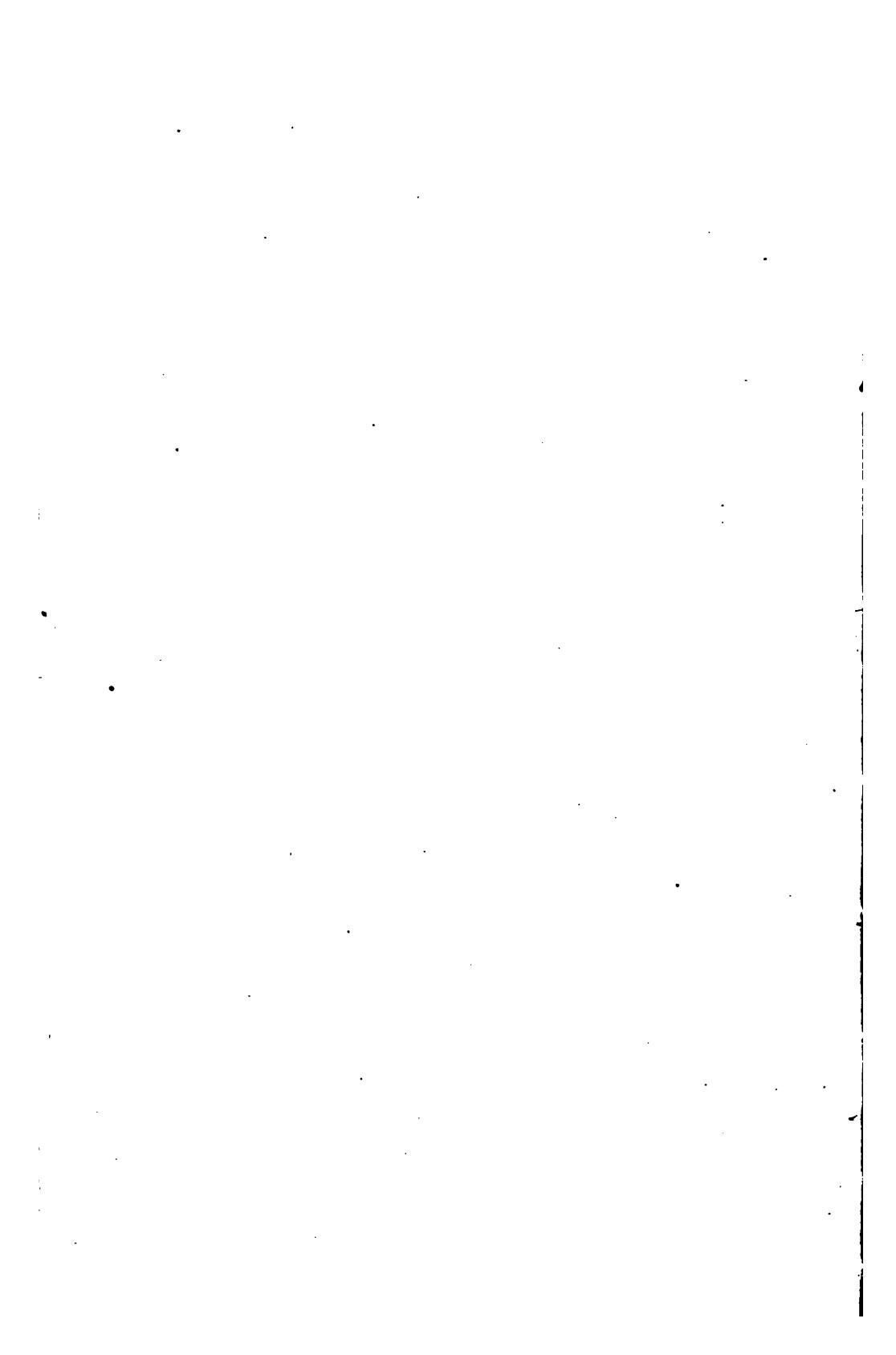
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© R E P O R T

ON A

PROPOSITION TO MODIFY

THE

PLAN OF INSTRUCTION

IN THE

UNIVERSITY OF ALABAMA,

MADE TO THE

Faculty of the University.

Read before the Faculty, Sept. 21, and before the Board of Trustees,
Sept. 26, 1854.

NEW YORK:

D. APPLETON & CO., 346 AND 348 BROADWAY.

1855.

BAKER, GODWIN & CO., PRINTERS,
No. 1 SPRUCE St.,
NEW YORK.

P R E F A T O R Y.

At a meeting of the Faculty of the University of Alabama, held on Friday, the 14th day of July, 1854, the following paper was read by the President :—

The President of the Board, and the Trustees now present, are unanimously in favor of modifying the present system of instruction in the University of Alabama, and respectfully request the Faculty of the University to report to an adjourned meeting of the Board, on Monday, the 25th of September next, the plan and details for the initiation and continuance of a system, conforming, as near as our circumstances will allow, to the arrangements in the University of Virginia.

JOHN A. WINSTON.
W.M. H. FORNEY.
JOHN N. MALONE.
ED. BAPTIST.
H. W. COLLIER.

University of Ala., July 12, 1854.

This paper was referred to a committee appointed by the President, consisting of Professors F. A. P. Barnard, John W. Pratt, and George Benagh ; which committee was instructed to report to the Faculty at an adjourned meeting, to be held on Monday, the 18th of September. On that day the Faculty accordingly re-assembled ; but adjourned without transacting business, in consequence of the absence of the President. At a called meeting, on Thursday, the 21st, the committee reported in explicit compliance with the terms of the request of the Board of Trustees ; and the report which follows, was subsequently presented by Professor Barnard, on behalf of himself and Professor Pratt, of the majority. It was ordered by the Faculty, at a subsequent meeting, that this document should be communicated to the Board of Trustees. The report was accordingly read before that body, on Tuesday and Wednesday, the 26th and 27th of September. The deliberations of the Board resulted, however, in the adoption neither of the plan originally suggested in the paper above given, nor of that recommended in this report ; but of one

which may perhaps be regarded as an experiment substantially new; conservative, in the main, of the features of the existing college system, but providing opportunity for such departures from it, in particular cases, as the judgment of the Faculty shall approve. The nature of this plan may be more particularly gathered from the following ordinance:—

1. That the studies now pursued in the University, the extent to which they are carried, and the number of recitations heard by each officer, shall remain as at present established, as near as may be.
2. That twelve recitations shall be heard upon each day of the week, except Sunday. The Faculty may, in their discretion, reduce the number of recitations upon Saturday, so that there be not less than four upon that day.
3. That the recitations of each day shall be assigned by the Faculty to the different hours in such a manner that a student, by taking three recitations per day, may accomplish all the studies taught in the University in four years. In doing this, the recitations of the Professor of Ancient Languages, the Tutor of Ancient Languages, and the Professor of Modern Languages, may be assigned to the same hours; so, also, those of the Professors of Mixed Mathematics and Pure Mathematics; also, those of the Professors of Chemistry and Geology. All other recitations must be assigned to hours at which no others are held.
4. Each student under the age of twenty-one years, desiring to select a particular study, shall be required to produce from his parent or guardian, if he has one, a written declaration of the special object of the applicant in coming to the University; and the Faculty shall then prescribe for him the course of study which will accomplish his object in the shortest time and in the best manner, having regard to the next two provisions.
5. Every student must have three recitations a day, as near as may be.
6. A student shall not enter upon the study he may select, until he has passed such an examination as will satisfy the Faculty that he may, by proper application, prosecute it successfully.
7. Upon a student's completing, and standing an approved examination upon, all the studies in any department, he shall receive the degree of graduate in that department, and a certificate bearing the seal of the University, and delivered at commencement, in the usual mode.
8. The degree of Bachelor of Arts shall be conferred upon a student only after he shall have passed approved examinations upon *all* the studies taught in the University.
9. Honorary degrees shall not be conferred by this University, except by a unanimous vote of the Board of Trustees.
10. All laws or ordinances, or parts of the same, now existing, which conflict with the foregoing ordinance, are hereby repealed.

R E P O R T.

THE undersigned, a majority of the Committee appointed by the Faculty of the University of Alabama, to consider and report on a request emanating from certain members of the Board of Trustees, in regard to a re-organization of the plan of instruction in the University, having consented to unite with the minority in a literal compliance with the request alluded to, and having discharged that duty, beg leave respectfully to present certain distinct views of their own, having a bearing on the general question raised by the proposition referred to them, and also on the considerations out of which, as they have reason to believe, this proposition has grown.

Change, it is hardly necessary to say, will never be sought for its own sake. Whenever and wherever there arises a steady and earnest demand for a new order of things in regard to matters which deeply concern mankind, whether they be affairs of state or systems of education, it is obvious, from the very nature of the interests involved, that the degree to which this demand is real and sincere, must be matter of easy ascertain-

ment. And when, to a majority of the community, the existence of a general feeling of dissatisfaction with the actual state of things is entirely unsuspected and imperceptible, it may well be questioned whether the impressions of a few, however decided, can be wisely accepted as of more weight in evidence than the tranquil contentment of nearly all beside.

It is by no means the belief of the undersigned, that those members of the Board whose names are appended to the request, which has led to the appointment of this Committee, are all of them, by previous conviction, in favor of the introduction into this University of the system of which they ask for the details. It is quite sufficient to suppose that the request was dictated by a desire, on the one hand, to know explicitly and definitely what it is which it is proposed to substitute here, in place of a system that, if not the best, has, nevertheless, the sanction of some centuries of experiment, and the present support of the general suffrage; and an equal desire, on the other, to satisfy the outside advocates of change, that the Board are always willing to examine any project for the improvement of the University, which, in the view of any friend of the cause of education, may deserve their deliberate attention. Those members of the Board to whom this inquiry is owing, are therefore regarded by the undersigned as occupying, equally with their colleagues, the attitude of judges, whose opinions are yet to be expressed, and not that of partizans, who are waiting only to act upon a judgment already formed.

The friends of the University, whose suggestions to the members of the Board have probably occasioned the present inquiry, appear to have been laboring under some impressions which a candid examination of facts cannot fail to dispel. These are—

- 1st. That the actual state of the University is not prosperous;
- 2d. That the number of students is smaller than is usual in colleges of equal standing in years;
- 3d. That there really exists an outside demand for a radical re-organization of the University, powerful enough, if resisted, to sweep down opposition before it;
- 4th. That neither the Trustees nor the Faculty have heretofore given thought to the possibility of introducing improvement into the institution; but that both bodies have manifested indifference to the spirit of progress which characterizes the age.

In speaking of the prosperity of an institution of learning, the general public seem to regard but a single criterion—that of the number of students it attracts, or succeeds in retaining. But this is a test which serves very ill to enable us to judge either of the value of the institution as a part of the educational machinery of the State, or of the esteem in which it is held by the surrounding people. It is perfectly well known to the undersigned, that many who would be students of the University are prevented from being so now, not because of any objection to the course of study here

prescribed, but because of what they please to consider the too great severity of the tests imposed to secure a certain respectable degree of scholarship and attainment. Could the Faculty be induced to think it wise to permit a material degradation of the standard of scholarship insisted on in this University, there can be no doubt that, without any other change whatever, an immediate and large increase of numbers might be realized. It is often charged that this Faculty is more severe in its exactions than that of any other college in the Southwestern States. Upon such an assertion it is not for the undersigned to express any opinion. The Faculty of the University of Alabama have acted without reference to what may or may not be demanded elsewhere. They have aimed but at the single object of making this institution one in which scholars may be formed worthy to be compared with those who issue from the celebrated and time-honored Universities of the older States. Whether in this they have succeeded or not, there can be no doubt, since it is matter of pretty frequent complaint, that they have set up here what is generally regarded as a high standard of scholarship. They have secured to the University of Alabama the respect of the surrounding community, and that of sister institutions throughout the country. To say that, in regard to the great ultimate ends for which colleges are instituted, there has been any failure here, or that there exists a want of a prosperity of the noblest kind, is at once unreasonable and absurd.

But in regard to the point of numbers. There is not, we must admit, a large number of students in this University, if we compare catalogues with Harvard or Yale, or even with the State institutions of North and South Carolina. But Harvard and Yale have several thousand living alumni; and the two last-mentioned colleges have several hundred—perhaps not less than a thousand—each. All of these old institutions are, or have been, the direct beneficiaries of the States to which they belong, or of many of their wealthy citizens; and they thus secure that interest and those sympathies from the surrounding communities, which all men bestow upon the objects they have befriended and cherished. The adult population of Alabama is yet mainly immigrant; the affections of the fathers of our youth still cling around the homes of their childhood, and their spirits still do homage at those shrines of learning, where they themselves, perhaps, were first imbued with the love of letters. In addition to this, there are growing up in this State, as in every other, institutions endowed and patronized by particular religious denominations; which cannot fail, even though they should offer advantages for mere intellectual culture much inferior to those which the University presents, to draw around them many who would otherwise swell our numbers. Nor has this institution yet a hold on the feeling of State pride, such as so powerfully sustains the State Universities of the two Carolinas and of Virginia. The population itself is too heterogeneous,

and too newly thrown together; to have learned even to recognize the feeling; and this feeling, so far as it is represented at all, is at present but humbly represented by a sort of sentiment of common interest. All these considerations are unfavorable to the growth of an institution erected in the midst of a people like this, by funds not contributed by themselves, interesting them by no associations connected with the past, and allying itself with no sympathies of theirs which may be linked with the present, or may extend to the future.

Under circumstances like these, ought it not to be a great thing, if the University is able to command from Alabama an attendance as large, in proportion to population, as the University of Virginia commands from the people of Virginia? The name of the Sage of Monticello ought itself alone, to be a sufficient guaranty for a host of youthful devotees at the altar which he reared to learning. The tone of exultant pride, in which every Virginian alludes to this enduring monument of the wisdom of Jefferson, would seem to indicate that no other institution could have a charm like this, to fill the imagination of a native of the Old Dominion. And, to leave speculation aside, it is in fact universally admitted, that the University of Virginia is a flourishing and prosperous institution. Now, in comparing that University with ours, in regard to numbers, we must manifestly reject from both catalogues all students from beyond the limits of the respective States. We must remember how many of

the sons of Virginia have emigrated South and West; we must remember what attractive associations cluster around the name of the patriot founder; we must bear in mind how easily, by means of the immense railway system of the Atlantic States, students even from our own borders may reach the Virginia University, more quickly and more agreeably than they can our own. Of this species of advantages we have not one. Hence we confine the comparison strictly to the numbers furnished by the respective States in which the Universities are situated, alone.

The catalogue of the University of Virginia, last published (for 1853-54), shows a total, of students belonging to Virginia, of 289. But, as a considerable number of these are students of law and medicine, they certainly, in a comparison like this, are not to be counted. By a careful enumeration, it appears that the number of these professional students belonging to Virginia is 126. The students in the Department of Arts are therefore only 163. According to the United States Census for 1850, the total white population of Virginia was, in that year, 894,800. The same authority gives the total white population of Alabama, at the same time, as 426,514. According to these figures, if the University of Virginia is prosperous while the State furnishes it *one hundred and sixty-three* students of Arts, ours ought to be equally so, so long as we have as many as *seventy-seven*. But the catalogue of the University of Alabama, published last November,

contains the names of *ninety-eight* students of Arts from Alabama; and, if we add those who were admitted after the publication of the catalogue, we shall have *one hundred and seven*. Is there any ground, then, for asserting that our numbers are feeble; or that Alabama does not patronize her own University as well as other States do theirs? Should the assertion be still adhered to, it can be established only by comparison with some State institution in which the close, instead of the open, system of instruction is maintained; and hence the whole inference, which it has been sought to derive from this fact, will fall to the ground.

In truth, the comparison just made is most disastrous to the claims of the Virginia system, as it respects its actual popularity. For, be it observed, a main reason why we are urged to adopt that system is, that the existing one is so hopelessly unpopular as to render some destructive outbreak in the legislature, or among the people, all but absolutely inevitable. Yet, unpopular as it is (if these assumptions are true), it is manifestly, as the figures themselves show, nearly fifty per cent. more popular in Alabama, than the system of the Virginia University is in Virginia.

Upon the question of success as tested by numbers, these remarks may, perhaps, be esteemed sufficient. Yet there are one or two passages relating to this point, in the report made to the Board of Trustees of this University at their session in July, 1852, by the President of the University, so forcible and conclusive,

that, as they are brief, the undersigned cannot refrain from here reproducing them.

"Numbers," says Dr. Manly, "in an institution depend upon its age and history, its position, the character and personal influence of its officers—especially of its graduates—the circumstances and character of the communities surrounding it, and upon facts and relationships so various that *the question of organization is left comparatively a very small influence.*" And again:

"In the earlier periods of its history, numbers have not constituted a conspicuous feature in any college. The first half-century, even, of the oldest and most popular of them, would not present an average of numbers disparaging to our own, in the short period reckoned by the University of Alabama. In Harvard, from 1806 to 1810 inclusive, a period of five years not unfavorable for the comparison, and when the college was 170 years old, the average number of undergraduates was 211." Once more:—

"Compared with other colleges, however, this University has its fair average. Of 121 colleges in the United States, reported in the American Almanac of 1850, 78 have fewer than were our numbers of that year, and only 38 had more. * * * In a document presented to the Board of Education in the city of New York, 1851, of 53 colleges (comprising the older, the endowed and popular institutions in the United States), 26 had more and 26 had fewer than our numbers of that year."

To these extracts may be added the following, from a letter addressed, by the Faculty of this University, to Hon. W. K. Baylor, chairman of the Committee on Education of the Senate of Alabama, in January, 1843: "No college in the United States," say the Faculty, "ever yet went into operation, which, in the years of its infancy, was not as limited in this respect as the University of Alabama. Many have been much more so. For fifty years from its foundation, the University of Harvard graduated, annually, on an average, fewer than seven individuals. For twenty years the average number of graduates at Yale college was about five. A young college, in a newly settled country, will never, in its infancy, be numerously attended. The demand for a high order of education among the people is neither great nor general. * * * If such a college prepare, every year, but a few men to instruct others, the immediate fruit of its operations may seem indeed to be small; but through those same men it is still to operate through a long series of years, and to carry the benefits of knowledge to hundreds and thousands. * * * How are the people ever to be made ripe for learned institutions, but by first preparing the teachers who are to diffuse among them the elements of knowledge? The streams which flow into the ocean are fed by the evaporation of the ocean itself. And the students who throng the halls of colleges, are brought there by the learning which, silently as the vapor rises from the sea, these colleges have scattered

through the land." And further: "Great numbers constitute, in general, the most trifling and shadowy and insignificant evidence of excellence in a school, which can be adduced. And if a seminary is young, and is situated in a new country, and nominally exacts some slight intellectual training as a condition of membership, great numbers, suddenly collected, furnish a very ominous indication as to the fidelity of its administration."

But it has been affirmed, and it is so still, with great positiveness and emphasis, that there exists extensively, among the people of Alabama, a feeling of dissatisfaction with the plan of instruction pursued in this University, and a disposition to originate measures which shall result in forcing, should not the Board conciliate it by yielding, a change.

That there may exist a general and somewhat vague desire for the introduction of some improvements upon the present system, the undersigned are not disposed to deny. They are the less so, because of the fact, well known to them, that a similar feeling has long existed among the members, both of the Board and of the Faculty themselves. It has been felt that the present course of study is too greatly burthened; and that the University of Alabama, in common with most or all of the colleges of the country, has gone on increasing the amount of its exactions from its students, until of the two evils—superficial teaching on the one hand, and overtasking the strength on the other—one or the

other seems almost unavoidable, and both are not unfrequently more or less experienced. That some improvement ought to be made here, the undersigned will not undertake to dispute. Of what precise nature or form the change ought to be, they propose to consider in the proper place. Every college which proposes to carry its students through a definite course in each distinct department—the University of Virginia as well as the University of Alabama—must be yet compelled, by force of circumstances, to look into and to correct the evil which here undoubtedly exists. The best manner of attempting to do this, has been subject of discussion between one or both of the undersigned and members of the Board of Trustees, at various times, for years; and plans have been actually drawn up by them and committed to paper. The difficulty and delicacy of the undertaking, and a natural unwillingness to press views which, while generally approved, might have failed to carry conviction in all their details, has hitherto prevented these discussions from leading to any important practical result.

But while the undersigned fully recognize the existence of a general desire for the improvement of the system of instruction which actually exists in this University, as having long partaken of that desire themselves, they by no means admit that there has yet appeared any evidence of a wish or design, on the part of the people, to subvert the system itself, and to erect upon its ruins, a fabric of so loose construction, and so

doubtful a character, as that of the University of Virginia. If any such disposition has appeared in any quarter, it is believed not to have been indicative of any general dissatisfaction, nor to have originated with the people themselves. The undersigned entertain great confidence in the conviction which they here express; and that for several reasons entirely satisfactory to them. In the first place, they, like other citizens, mingle more or less with the people, and they do not entirely neglect to correspond with intelligent gentlemen at a distance from Tuscaloosa. While they confess that there have come to them, from time to time, through such channels, complaints of one description or another, in regard to the University,—complaints even of those evils connected with the course of instruction, which the undersigned have just signalized,—they are free to say that, until since this subject was referred to the Faculty by the members of the Board of Trustees assembled here at the late Annual Commencement, they never received, from any source of information whatever accessible to them, the slightest hint of the propriety of any sweeping change, or the most doubtful suggestion of the expediency of introducing here, the system of the University of Virginia. This, it is true, is merely negative evidence; but in a question of great public interest, like the present, negative evidence has weight. That which agitates a whole people, cannot but be in the mouths of indi-

viduals; and that of which men talk, those who mingle with men must hear.

That there can be no popular demand for the introduction of the Virginia system here, is further evident from the fact, that not one in twenty of the people knows what the Virginia system is. It certainly is not what it is apparently believed by some to be; and that is, a system which permits any student to pursue any study selected by himself or his guardians, at any time, to any extent, and with any rapidity he pleases. And the prevalent misapprehension on this subject, amounts really to a serious evil; since the expectations which have been held out regarding the plan are sure, should it be adopted here, to be sadly disappointed. But on this point the undersigned propose to speak more fully in its proper place.

The absence of any popular demand for this species of change is still further evidenced by the tone of the public press, both before and after the request of the members of the Board, who were present in July, was laid before the public. Nothing can be more certain than that, throughout the collegiate year of 1853-'54, down to the month of May, when some slight troubles entirely connected with *discipline* elicited some discontented remarks, not one word appeared in any public print in Alabama, in relation to the University (and the notices were many), which was not congratulatory and almost exultant, in view of the steady improve-

ment of the Institution in prosperity, and in view of its well-established reputation for thorough and judicious methods of instruction, and for the sound and substantial attainments of its students. And in the expressions of discontent just alluded to, and which were directed entirely toward police and other regulations and measures for the government and not for the instruction of the under-graduates, it is worthy of remark how generally, and in fact how almost universally, the conductors of the press mingled with their words of dissatisfaction the regret that these events should have befallen at a moment when the University, having lived down its disasters, had become so proudly prosperous, and had succeeded in raising itself so deservedly high in the confidence of the people of Alabama. Whoever has had access to the public prints of the State generally for the past twelve months cannot but be forcibly struck with the truth of these reminiscences. The undersigned therefore assert, without fear of contradiction, that, if the tone of the public press can be regarded as in any degree an index of that of public sentiment among a people, then it is so far from being true, that there is a popular demand for the subversion here of our time-honored course of instruction for the sake of introducing one not even known to a majority of the people, that the feeling of the masses has been entirely the other way,—entirely one of satisfaction and content.

If, further to test this question, we compare the

expressions of opinion put forth by the same organs, explicitly upon the proposition brought before them in the published request of members of the Board of Trustees to the Faculty, which has occasioned this inquiry, we shall find that nearly every press, in which the subject has been elaborately treated, has been decided in disapprobation of the change. Some of the reasonings on the subject, which the proposition has elicited, have proceeded from alumni of the University; and the undersigned hazard nothing in saying that they have manifested an ability which would do honor to graduates of any college in the Union.

Upon the question whether the Trustees or the Faculty have ever been indifferent to improvement, or averse to it, some remarks have already been incidentally made. More specifically it may here be stated, that, in order to meet an alleged necessity or demand, the Trustees, with the cordial assent of the Faculty, in the year 1844, established a special school for the instruction of such young men as might desire to become teachers without completing the entire collegiate course. A plan of instruction was devised for this school, which was designed to extend, in whole, over three years; and the Faculty were authorized at their discretion to issue to the students, at their departure, certificates of proficiency. Extensive publication was made of this arrangement, in the catalogues and circulars of the University and in the public prints; *but not one student ever volunteered to avail himself of*

its benefits. In the year 1846, the Trustees created a Department of Law, and elected a Professor. It was thought that a professional school in this department might be successful in Tuscaloosa, and that its success might exert a reflex influence favorable to the prosperity of the Faculty of Arts. But no sufficient number of students ever presented themselves to induce the Professor to commence his course, and by degrees the school of Law (which the undersigned believe was never abolished) passed out of recollection.

The report of Dr. Manly, from which some brief extracts have already been given, is another evidence of the solicitude which the Board of Trustees have always manifested for the improvement of the University, and for the extension of "the benefits of the Institution to a greater number of the citizens of the State." In compliance with the request of that body, the President of the University, in company with another officer, made, during the summer of 1851, an extensive journey through various States, attending in the meantime the National Educational Convention at Cleveland, and gathering, wherever he went, the results of a great variety of experiments carefully made under the eyes of experienced educators. All this he embodied in a report read to the Board of Trustees only two years ago, and printed by their order. It is absurd to suppose that such an amount of pains was taken for nothing; or without a sincere purpose to profit by the

experience of others, and to introduce here any changes, whatever they might be, which should seem to hold out a promise of increasing the usefulness of this University. Yet so little encouragement did the carefully arranged statistics of that report hold out to the spirit of innovation, that, after the reading of it, not one single voice was lifted in behalf of any departure whatever from the existing system. It has not been without considerable surprise that the undersigned have witnessed the inexplicable fact, that, after a lapse of only two years from the presentation of that report, the same Board who listened to it and ordered it to be printed, have seriously entertained a proposition, which the statistics contained in that document demonstrate to be ruinous in its tendencies to the last degree.

Since the purpose of Dr. Manly in his report was simply to state facts with their natural inferences, and not to dictate measures to the Board of Trustees, it may possibly be objected, that those who take the view of its bearing here expressed fail to understand his statements, or reason perversely from his figures. Such an objection will hardly be thought to lie against the inferences of gentlemen who peruse the pamphlet at a distance, and whose habits of mind and whose acquaintance with colleges may be presumed to fit them peculiarly to form a correct judgment. Bishop Potter, of Pennsylvania, in a document (printed, but not published) relating to the University of that State, which he has kindly communicated to the undersigned, after

speaking of Dr. Manly's report as "the fruit of much laborious and careful research," and as "a most valuable contribution to the cause of a higher education," characterizes it as an "able and *most conservative* report." E. C. Herrick, Esq., A. M., Librarian and Treasurer of Yale College, remarks incidentally (in a private letter), of the question now pending, "I cannot but think that Dr. Manly's report would be a very satisfactory refutation of the proposed plan." And still more emphatically observes Dr. Swain, of North Carolina, in the conclusion of a most valuable letter on the general question, "I read his [Dr. Manly's] pamphlet two years ago with pleasure and profit; and took it for granted that his argument and authority would be considered conclusive by the managers of your institution. Instead of indulging in these hasty expressions of opinion, I might well have contented myself with a simple endorsement of his well-considered views."

But, notwithstanding all this, the whole question is opened up again, and the undersigned are absolutely constrained, against their will, to go back to first principles, and to retrace all the steps of a discussion which they had hoped, during their day, never to see revived in this institution.

Let it be understood in the outset, that it is in no spirit of unfriendliness or opposition to institutions for professional, technical, special, or partial education, that the undersigned are disposed to remonstrate against the transformation to which it is proposed to subject this

University. If there is a demand for such institutions, let them be created; if it is true, as is so frequently asserted, that hundreds of young men are absolutely cut off from any opportunity to acquire the education they need, because the University will not (it would be more just to say, cannot) give it to them, then there should be no delay in providing the facilities which their case requires. It cannot be that means are wanting, or ever will be so, if the alleged demand be real, to endow and furnish schools fashioned in the strictest conformity to the popular dictation; for schools to which hundreds are waiting to resort so soon as their doors shall be opened, can never fail to prove eminently lucrative, considered merely as pecuniary investments. If, then, this demand be real, there exists not the slightest reason for insisting that the University shall provide for it; and if it be not, the argument in favor of change crumbles away into nothing.

To exhibit, however, the entire and true basis upon which the undersigned rest their opposition to the proposed transformation, it is necessary to bring prominently into view what is the distinctive characteristic of a University,—what is that peculiar function which it is specially empowered, and, in fact, created, to fulfill; and the possession of which may perhaps serve to explain why it is that this frequent demand for popular, easy, or optional courses of study, should be continually directed against them, instead of venting itself in the very obvious and effectual mode of providing institu-

tions of the kind professedly required. This peculiar function is the granting of degrees; and in the exercise of this, the University does all that is essential to its office. The University of London, at the present time, confines itself to the discharge of this single function; and the early history of all the old Universities of England, or of the continent of Europe, shows that, while they certainly furnished instruction, and their instructors were excessively numerous, the only recognized point of contact between the University as a body and the individual student was that in which the latter presented himself as a candidate for graduation. The value of the degree conferred consisted, of course, as it does still, in the fact that it stamped the graduate as a scholar—a man well versed in what were called the liberal arts, and in philosophy. By what course of study he had attained the mastery of these subjects, mattered not then, as, in point of fact, in London, and to all intents and purposes in Oxford and Cambridge, it matters not now: provided the candidate, on the application of certain severe tests of his scholarship and knowledge, was found to be worthy of the degree, it was awarded as a matter of right. These tests were examinations, extended and thorough, oral and written. At the present time, the University of London employs salaried examiners, who have no other duty than to ascertain the merits of applicants for the honor of graduation.

In the older Universities it used to be held, that

education is not complete and thorough until the student has been disciplined not only in receiving but in imparting knowledge. Every Bachelor of Arts was required to teach certain books or subjects, in order that he might become a Master; and "every Master or Doctor was compelled by statute, and frequently on oath, to teach for a certain period, which was commonly two years, immediately subsequent to graduation."* The instruction, therefore, which might have been acquired in any school, preparatory to an application for graduation, was furnished in necessary abundance in the University towns; and thus the business of teaching fell naturally, in a great measure, under the regulation of those institutions themselves. At Oxford and Cambridge, from which American colleges have borrowed most of their peculiarities, a new feature was, in process of time, developed. Eleemosynary establishments, called colleges, were endowed for the support and residence of poor students; and boarding-houses, for those who were able to pay, arose in great numbers, under the name of halls. Each of these colleges and halls was made subject to the government of a resident master, who was assisted in his duties by one or more tutors. Since their origin, the character of these establishments has undergone great changes. At first, the proper business of the tutors was, mainly, to look after the conduct of the pupils, and enforce upon them habits

* Sir Wm. Hamilton's Discussions on Philosophy, &c.

of personal neatness; but, in the progress of the mutations which time has introduced, they have become almost exclusively the teachers of the under-graduates in all the studies required to fit them for the University examinations, which are to determine their title to a degree.

Since graduation in the English Universities depends strictly upon the results of examination, and not upon a record of a more or less faithful attention to a prescribed routine of daily study, it might appear that the student there should be subject to no control in regard to the order in which he may pursue his studies, or prepare himself for the final ordeal. But this is not so. It is a manifest necessity that, where trial is by examination, there should be some established *standard*, by which the attainments of each candidate may be tested. Such a standard can only be intelligible and definite when presented in the form of a prescribed series of books, of which the contents are to be perfectly mastered. This reduces the business of University instruction, which is in its intention, and which may be in fact, a teaching of *subjects of knowledge*, to the mere inculcation (for purposes of graduation) of the substance of certain special treatises of science or philosophy, and certain particular works of ancient and modern literature. Thus is established what is called the college curriculum of study.

As the original design for which the academic honor of graduation was instituted was to distinguish those

who had submitted to a thorough course of intellectual training, the subjects of examination, and consequently the curriculum of study, embraced from the beginning matters designed to exercise, in due and symmetrical proportion, all the faculties of the human mind. The seven liberal arts, as they were called, received this name because they were believed suitable to furnish this training. They were distinguished from the arts of handicraft—the mechanic arts—on the one hand, and from the arts of embellishment—the fine arts—on the other. They are fitted, in their several ways, to induce those intellectual habits without which nothing valuable can ever be accomplished in the world of mind; and to furnish that exercise which is as necessary to the development of mental as of physical vigor. The pursuit of mathematical studies is well fitted to induce habits of close and concentrated attention, and the power of following out a continuous and extended train of thought. The study of Language invigorates and strengthens the memory, leads to a facility in delicate discriminations, multiplies ideas, improves the power of expression, gives increased command of the instrument by which, mainly, mind influences mind, and suggests much material for that species of reasoning which rests on probable evidence, through the indications it furnishes of the affiliations of the races of man. The more systematic exercise of the reason is brought into play in the study of Dialectics. Here the learner becomes instructed how to apply the touchstone to

argument, to distinguish sound reasoning from sophistry, to arrange the materials of a discussion, and to present truths of inference in the most impressive form. Rhetoric cultivates at once many faculties. It stimulates the invention by demanding what considerations may be alleged in support of specific propositions; it disciplines the judgment by calling upon it continually to decide nice questions relating to the propriety of language; it cultivates the imagination by exercising that faculty in all the embellishments of figurative expression; and it trains and corrects the taste by employing it to control the exuberance of a fancy too apt, when unrestrained, to run into riotous extravagance. Natural Philosophy, in its various branches, furnishes numerous happy examples of reasoning from induction, or inferring truth from probable evidence. Moral Philosophy is a continuous and improving application of the principles of logic to questions which concern the conscience; and in its cultivation is calculated to render more acute the power of discrimination in matters of abstract truth, as well as to establish principles in place of feeling as the guide of action. And the Philosophy of Mind, the science of self-knowledge, the most important, perhaps, of all studies, considering its influence upon the subject, furnishes a discipline of the most superior order, as it opens up a world vast as that of matter and impalpable as the thinking essence itself. "Philosophy," says Sir William Hamilton, "the thinking of thought, the recoil of mind upon itself, is one of

the most improving of mental exercises, conduced, above all others, to evolve the highest and rarest of the intellectual powers. By this the mind is not only trained to philosophy proper, but prepared, in general, for powerful, easy, and successful energy, in whatever department of knowledge it may more peculiarly apply itself." Thus every study throughout the entire range of the liberal Arts and the Philosophies has its peculiar use and value in drawing into activity and cherishing into vigor the various powers and faculties of the human mind. When all are in due proportion combined in a system of intellectual training, the pupil emerges from the discipline with a mind well balanced, and equally fitted to grapple with whatever difficulty. Should he now direct his energies, as is usual with the majority of men, into one particular channel, he is in no danger of adding to the number of those characters so frequently met with, whose one-sided development renders them giants within the domain of their chosen profession, and pygmies without. On the other hand, though in his special pursuit he may attain eminence with much or with little labor, it will not be at the expense of disqualifying himself for intelligent intercourse with men of every other class. Let anyone look round him and silently count how very many, within the circle of his own personal acquaintance, are men merely of a profession or a class. How many are there, whose merits in their proper vocation are the theme of general admiration and praise, yet who are so little thought of as fit to

advise or suggest or lead in any enterprise out of this their peculiar and narrow range of action, that the merest hint at such a step, as likely to be volunteered on their part, is sufficient to excite a smile. It cannot, it will not, be maintained, even by those who most loudly demand that our universities shall be converted into schools for technical or professional education, that to be a merely technical or professional man is all to which a youth should aspire. It cannot be that even the most earnest of our educational reformers can fail to perceive how immensely higher, in the consideration of his fellow-citizens, stands the man who, whether his daily avocation be that of a merchant, or a physician, or a machinist, or a farmer, or a lawyer, or an iron-master, possesses a mind cultivated in all its faculties, and stored with a wide range of general knowledge, than he who, whatever may be his mastery of his particular pursuit, knows nothing beyond it. These men of universal cultivation and comprehensive knowledge, are the men to whom the less fortunate majority look for counsel and guidance in difficulties, for collected calmness in periods of excitement, for the scrutinizing examination of projects of innovation or improvement, for judicious opinions as to the results of measures of policy, in short for all those manifestations of intellectual superiority which secure to the thoroughly educated everywhere a position and an influence which nothing else can do. These thoroughly educated men will always be the comparatively few, as they always have been

since the world began; and the reason is, that the majority cannot for want of time and means, or will not for want of disposition, submit to the steady, long-continued, and even painful discipline which can alone entitle them to rank among the aristocracy of mind. To denounce our colleges, because, where hundreds of young men are growing up together, they only educate their tens, and to demand that their gates shall be thrown so widely open that all those hundreds may enter in, is neither just in the first instance nor wise in the second. For the fact that, out of the many who might be, but few are actually educated, is a fact which, however unfortunate it may appear, is attributable to nothing else but the unwillingness of the majority to submit to the intellectual regimen which the colleges prescribe. And the demand that some portions of this regimen shall be omitted, and that the stamp of scholarship, or the diploma which was originally designed to be the stamp of scholarship, shall be awarded for a less equivalent of labor rendered, can, if successful, have no effect but to degrade the distinction and bring the honor low, instead of lifting the graduate to the position in fact, which he will have thus secured in name.

It is, however, very commonly asserted by the advocates of revolutionary measures in our colleges, that they aim not to break down existing systems of education, if any prefer still to cling to them, so much as to superadd other and varied methods, partial or thorough, extended or brief, according to the option of the student, or of those who direct his course of training

Let the old curriculum stand, they say, for all who choose to follow it ; but let not the college be so niggardly of the treasures of its learning, as to deny a portion to those whom misfortune or poverty, or advanced age will not permit to enjoy the whole. We object not—this is their profession—to any degree of severity or thoroughness, or to any extent of range which you may choose to prescribe to such as, bowing to your dictation, consent to submit to this oppression ; but we demand that everybody shall be educated in his own way, thoroughly or partially, profoundly or superficially, just as he pleases.

Now, for the sake of argument, let us admit that, on the plan proposed, there may possibly be as many volunteers for a thorough course of instruction—the very course now prescribed—as there are at present ; and therefore that the studies of this class may be sustained, without any variation from the present arrangements, no matter how widely the doors are thrown open to others. But, then, with only the present means and appliances of the college, what is to be done with these others ? If they are introduced to the regular recitations and lectures of the thorough-course students, they are tied up in each department to the same inviolable routine, compelled, willingly or unwillingly, to travel over the same extent of ground, chained down to the same unalterable rate of progress, against which we hear so frequent and so stout protest ; and, in case they desire to pursue but a single branch of study, or but one or two, they find no remedy *in the system*

against the necessary waste of two-thirds or three-quarters of their time. They must, therefore, if properly instructed at all, constitute a body entirely, or in great measure, independent of the thorough-course students. But the reasons which require that their wants should be independently provided for, would also require that there should be independent provision for every limited group of them, whose choice of studies might happen to fall in a common direction, while it differed from that of the majority. Even in some instances, and in many, if this system of free choice of study should be carried out wherever it may lead, a single individual might require special provision for his separate instruction. Our universities, with their feeble means, might be expected to perform all that is attempted by those of Germany, with professors and teachers numbered by the score or by the hundred. "In the German Universities," says Dr. Manly, "which boast of a large circle of branches, and are eminently expensive establishments, professors are maintained who sometimes have classes of not more than two or three students (he might have said one, and often, for intervals of time, none), and this in a country where scholars are numbered by tens of thousands."

This view of the case divests of all its plausibility the proposition to transform our colleges into something new, in compliance with an imaginary popular demand. It proves that if the thing, for which it is affirmed that the popular voice is so decidedly pronounced, should be conceded as a reality, the result

would be substantially not to transform an old college, but to superadd to it a new one, or half-a-dozen new ones ; the whole, indeed, in some degree lending each other natural aid, but each requiring, in the main, a separate and independent management. Now, even to this it would not be necessary to raise any very strenuous objection, if, along with the proposition to transform, it could be shown, either that the officers of the existing Faculties are able—and by this is simply meant, able physically—to endure the increased burthen of duties which the change would draw down upon them ; or that the change itself would bring with it the means of so increasing the academic staff, as to make it equal to the vastly increased labor. It is evident, from what has already been said, that the first branch of this alternative cannot be maintained ; and if it could, there is no reason to suppose that college officers, not usually extravagantly paid even for the services they now perform, would submit to a drudgery which would consume their entire time and waste their entire strength, while it condemned them, for absolute want of opportunity, to a complete cessation, on their own part, from all further intellectual progress. None will submit to a degradation like this, but such as have no desire or aptitude for further personal improvement,—none, therefore, whose names enrolled in the list of a Faculty could give to a college reputation, or awaken pride among its patrons and friends. As to the other branch of the alternative, the probability that the change would so improve the revenues of the institution, as to make it

practicable largely to increase the corps of instruction, two remarks may be made. If this probability amounts to a certainty, it would seem rather to call for the erection of a special institution, which, by the terms of the supposition, must be self-sustaining; and which, being untrammelled by the necessity of following, with a large portion of its students, a Procrustean course, must certainly accomplish its objects better than it could do while so encumbered. If, on the other hand, there is no certainty about it, if the chances are only equal, or if they are less than equal, that the revenue will keep pace with the necessary increase of expenditure, is it not wrong, is it not almost wicked, to expose institutions already doing good service in the cause of education, to the hazard of utter ruin, for the sake of instituting a more than doubtful experiment?

But perhaps it will be said that the University of Virginia, from which it is proposed to draw the plan of our remodeled system of instruction, has not a numerous body of instructors—has not, in fact, a larger number of officers in its Faculty of Arts than we have in ours. This fact is certainly undeniable; but this very fact proves that the arguments which are most confidently relied on in favor of change, are entirely baseless. It is said that we must introduce here the system of the University of Virginia, in order that every student may have the opportunity, in the words of Dr. Wayland, to study “what he chooses, all that he chooses, and nothing but what he chooses.” Yet this the undersigned have, as they believe, shown to be im-

possible, without that large number of teachers which confessedly the University of Virginia has not. And if we refer to the statement contained in the catalogue of that institution for the last collegiate year, we shall find that the Faculty, instead of making any pretence to provide for the varying wants of young men who wish to study "what they choose, and nothing but what they choose," merely arrange their students in classes—not the usual college classes, which are the same with every officer—but in classes which may be different in different departments, while in the same department they are constant throughout the course. It appears, from this authority, that the number of classes receiving instruction in each department is only in a few cases greater, but is quite as often less, in the University of Virginia, than in the University of Alabama. In illustration of this statement the following comparison may be made. It exhibits the number of classes simultaneously reciting similar subjects, in the two institutions.

	Univ. of Ala.	Univ. of Va.
Latin and its Literature,	Four . . .	Two.
Greek " " "	Four . . .	Two.
French,	Three . . .	Three.
Mathematics, pure,	Two . . .	Three.*
" mixed,	Two . . .	Three.
Geology, &c.,	One . . .	One.
Chemistry,	One . . .	One.
Ethica, &c.	Four . . .	Three.
<hr/>	<hr/>	<hr/>
Total,	Twenty-one.	Eighteen.

The Virginia University appears to offer no advan-

* The department of pure mathematics in the University of Virginia has nominally four classes; but one of these is a class in mixed mathematics. The department of mixed mathematics proper has but two classes.

tage over our own, as it regards the freedom of the student within a given department to select his own studies, if we except a slight one in the departments which embrace the exact sciences. Supposing, therefore, that the ordinance of the Board of Trustees of this University, which was enacted in 1831, opening the institution to what were called "partial-course students," should be now again revived; it would require but very slight alterations in regard to the hours of lecture and recitation, and in regard to the number of classes in each department, to give to this college the plan of the University of Virginia complete. The language of the law referred to is the following, as printed by order of the Board in 1837. "The University shall be open to persons who do not desire to take the full course and to be graduated as Bachelors of Arts, but who desire to take a partial course and be graduated in particular departments only; provided they are found qualified for the studies of the department which they wish to join; and provided they take not less than the usual number of departments," &c., &c.

But it is certainly not this plan which we are told that the people demand. The promise held out, has been that the University, as reorganized, should give instruction to all who come here to demand it, should give them precisely what they demand, and should give it precisely when they demand it. Such, at least, is undoubtedly the popular understanding of the proposition made and widely published in regard to our University. If the call for change has assumed the definite

shape of a demand for the system of the University of Virginia, it is not because that system, as it exists there, is known to the people of Alabama in general, and by them approved; but because that name has been used to stand for the thing desired, and which, by the proposed reorganization, it is hoped to obtain. Expressly on this ground would the undersigned, under any circumstances, resist the alteration; for since the system called by this—for the moment perhaps popular—name is certainly not the thing which the people who are said to ask for change expect, it is folly to suppose that they will be satisfied with it after they come to see what it actually is. The thing which the people do really desire, if they desire any thing, is that which the undersigned have shown to be what it does not belong to this University to attempt to supply, on the ground that it either will not pay and is therefore impracticable and cannot but be ruinous, or that if it will pay, it has no need of the University.

The very small number of students of Arts furnished by Virginia to her own University, as has already been shown earlier in this Report, is evidence enough that the system has not the approbation of Virginians themselves. This fact will appear more unanswerably true, if we extend the comparison to other colleges, where the close system is severely carried out. The College of South Carolina, for instance, exhibits a list of 189 under-graduates for the collegiate year 1853–54, of whom 175 are furnished by the State of South Carolina itself. The total white population of the State,

according to the census of 1850, is 274,563 ; while that of Virginia, as already stated, is 894,800, furnishing only 163 students of Arts to the State University. If South Carolina patronized her college no better than Virginia does her University (the professional schools apart), she would send to Columbia but 50 students instead of 175. The South Carolina College is one of some standing in years. Let us take another, also maintaining rigidly the close system, which has been in operation only for a limited period—the University of Mississippi. The total number of students on the catalogue of this institution for the past year is 158, from which subtracting all but those whose residences are in the State, and who are pursuing the regular under-graduate course, we shall have 134, upon a population of 295,718. Yet if Mississippi were no more partial to the course of education in her University than Virginia seems to be to that which hers has adopted, she would furnish to it only 53 under-graduate students.

In the following table are presented the results of similar calculations for a number of colleges whose catalogues happen to be at hand. The dates are the latest accessible, and are all recent. In the first column are placed the number of under-graduates which each State would furnish to the college belonging to it, if it furnished the same number, in proportion to population, which Virginia furnishes to her University ; and in the second are placed the actual numbers present, as given in the several catalogues, excluding all from other States, and all who are not regular under-graduates :—

		Proportional Number.	Actual Number.
University of Va.,	.	163	163
University of Ala.,	.	77	107
S. C. College,	.	50	175
University of Miss.,	.	53	134
University of Geo.,	.	95	107
University of N. C.,	.	100	139
Yale College,	.	66	135
Harvard University,	.	178	238
Dartmouth College,	.	57	160

It appears to the undersigned that facts of this nature, and which admit of being multiplied to a much greater extent, combine to furnish an absolute demonstration that the system of instruction practiced at the University of Virginia is, for students not attending the professional schools, absolutely out of favor and unpopular where it is best known,—in the State of Virginia itself. It appears that not one single consideration exists to encourage the belief, that that system, transplanted here, would be any more favorite with the people of Alabama than it is in Virginia. It appears that, though the name has become a popular catchword among those who have urged the remodeling of our own State University, yet the reality which it represents is not at all that thing which it is evidently here supposed to be; and that its introduction with us could only lead to immediate disappointment, and ultimate dissatisfaction and disgust. If it should at first be successful in attracting to the University a material increase of numbers—and, considering how much has been promised of which the performance is impossible,

perhaps it might—it is quite hopeless to expect that its popularity would outlive the discovery of the hollowness of its pretensions.

The undersigned have thus far argued this question as if it were one of mere policy or interest—a question to be decided by the probable comparative popularity of different plans of organization. They have fully proved, at least in their own opinion, that, even considered from this humble point of view, the proposed change is inexpedient, as being full of danger, if not certain to end in disaster and ruin. But it is not here that the undersigned find those considerations, which ought first of all to demand the attention of a wise man planning a scheme of education, which is perhaps to give character to the intellectual training of a whole people, and to perpetuate its consequences, for good or for ill, to many succeeding generations. It will be a sad day for the cause of sound education, if it shall ever happen that our institutions of learning shall be found watching the fluctuations of a too usually uninformed popular opinion, and endeavoring to adapt themselves to its incessant changes. The will of the people, in regard to the management of all public interests, must of course ultimately prevail; but the true will of the people can never be known until the people themselves are fully informed. There are some subjects which to present superficially is almost of necessity to present erroneously; since it is true of them, as of many things in material nature, that the color of the surface is entirely the reverse of what

appears beneath. To talk of the organization and appropriate functions of colleges to those whose personal observation has never extended beyond the common school or the academy, is almost necessarily to awaken unfounded impressions, unless much greater explicitness of statement and copiousness of explanation is employed, than it is always, or even generally, easy to give. Therefore is it, that to appeal on these subjects to the popular judgment—by which is meant the judgment of the whole mass of the people—is, as a general rule, injudicious ; since, while nothing is on the one hand more easy than to unsettle confidence in the existing order of things, nothing is more difficult on the other than to make the whole subject so universally clear as, if evils exist, to insure their wise correction, or, if they do not, to re-establish again the confidence which has once been shaken.

It is, on this account, in the opinion of the undersigned, much to be lamented, that the question of the proposed re-organization of this University has been made a subject of general discussion, instead of being considered and disposed of by the Board of Trustees exclusively. It is not in their power to say that dissatisfaction has not thus been awakened in quarters where it did not exist before. It seems to them, indeed, hardly possible that some such effect should not have been produced ; but so far from believing it to be their duty, in case of the appearance of any indications of this sort, to give way to the inconsiderate demands of a popular clamor, or to abandon the cause

of which their official position renders them, in their own view, the bounden defenders, they would believe rather that it belonged to them to put forth every exertion of which they are capable, to enlighten and correct and modify the public sentiment itself. And if, after thus washing their own hands clean of all participation in the sacrilege, they should yet be compelled to witness the consummation of the threatened ruin, they would prefer still to contend single-handed against the destroyers, rather than join in the destruction; and, if it must come to that at length, to die in the last ditch.

Discarding, therefore, the question, will the proposed system be popular or not—will it bring great accessions of numbers or not—as being one of but subordinate importance, the undersigned protest against the system on the ground that its introduction would be a practical treason against the cause of sound education in Alabama, and against the interests of the great republic of letters everywhere. It would be to offer a direct encouragement and reward to the desertion of that round of thorough and varied mental discipline, which the scholars of all time have pronounced to be absolutely necessary to make a scholar. It is to place the partially, or the superficially, or even the partially and superficially educated man (for it will come to that at last), practically on a par, so far as college sanctions go, with the profound and thorough—to prostitute the people's mint to the manufacture of base counterfeits, and give to worthless brass the stamp of gold. For

the popular demand of which we hear so often, and to which we are reminded that we must yield if we would not be swept away by it, is not, after all, a demand so much for the opportunity and permission to learn, as for the attainment of a deceptive seeming to have learned. It is not so much a claim for admission to the schools, as for the diplomas which the schools have it in their power to award. Nothing could put this assertion more completely beyond all question than the fact that the outcry is never for the erection of independent schools, which, if the demand is real and is for real knowledge, would of course be crowded and could not but be profitable; and which would have the great additional advantage, that being erected to meet a distinctly announced want, could be modeled on precisely the plan best adapted to satisfy the impatient public; but is invariably for the transformation of a college into some novel shape, for the breaking up of its settled system of education, for the rejection of this study as antiquated and that study as useless, and, in short, for a Jack-Cadetlike turning of the coat of the commonwealth of letters, and setting an entirely new nap on it. And if we compare with each other those institutions in the country which have endeavored to accommodate themselves to this asserted popular demand, we shall find that, as a general rule, when they have offered simply the knowledge without the diploma, the boon has been regarded with contemptuous indifference; but that when they have offered the diploma at the same time, they have sometimes secured

a respectable attendance. Yet even in this case, there has been no example of a throng like what has been anticipated here, attracted by the concession. If, in describing the attendance, it is allowable even to use the word respectable, as above, it certainly would not be allowable to use a stronger word.

As an example of a college offering the knowledge without the diploma—permitting students, in other words, the same latitude of choice which is granted in the University of Virginia, but withholding from them the honor of graduation—may be instanced the University of Georgia. The latest catalogue of this institution which happens to be at hand (that of 1848–9), gives the total number of its students for the year at 140. The number of partial course, or “University” students, is not stated; but in Dr. Manly’s report (1852) a statement is given from one of the professors, which puts the average number at only *four* or *five*. President Church, in a recent letter, speaking of the system, says, “The result has been any thing but favorable. Occasionally a student of this class has been clever and has done well; but most have not been much benefited—and in many instances I think they have been injured.” Dr. Church proceeds to add—and it will be noticed how completely the remark corroborates the position which the undersigned have been endeavoring to maintain: “The friends, however, of the Virginia system, I apprehend, will say that our partial course is very different from their system; that it takes away the stimulus to effort by making the irregular student an

inferior order, and depriving him of all expectation of college honors. And this is doubtless true." Yes, it is true—it is the desire for the stamp, and not for the knowledge which the college has in its power to bestow, which only can draw students of this class to such an institution, or make them diligent after it has attracted them.

A similar illustration may be found in the University of Rochester. In this institution there are two distinct courses of study on the principle of the close system; one called the Classical, and the other the Scientific. They differ mainly in the respect that the latter course substitutes the modern instead of the ancient languages throughout the entire period of instruction. The plan is also so arranged, that the student may pass from the classical to the scientific course, if he pleases, at the end of the Sophomore year, without prejudice to his standing. But, besides this, it is permitted to students to select their own departments at pleasure, as in the Virginia University, but without admitting them at the end, like the others, to a degree. The catalogue of this University for 1853-4, shows, out of a total of one hundred and eighteen under-graduates, only *eleven* of this class, of whom only *four* have advanced beyond a single year.

Union College, in the same State, may serve as example of the influence which the hope of obtaining a degree exerts to enlist recruits in this sort of educational guerilla regiment. This College offers, like the Rochester University, the scientific and the classical courses

above described; and it also offers, like the same again, but with the offer of a degree besides, the full freedom to select a course at pleasure, which is the distinguishing characteristic of the Virginia University. In the catalogue of this institution, for the third term of 1854, we find a total of 241 under-graduates, and out of them, the large number of 57 are "University students." The number, we say, is large; and it is so when we compare it with the insignificant exhibit of the Rochester or the Georgia University; yet, after all, it is remarkably a minority in the grand total of Union College itself. Now, if this "open system" is more popular than the other, the fact ought to manifest itself in the colleges which professedly furnish both and crown those who follow them with equal honor, by showing the balance of numbers correspondingly in its favor; but this is a thing which never happens.

The University of Virginia itself, prosperous as at the first view of its catalogue it seems, enjoys but a very moderate prosperity in its Faculty of Arts. Were it as well supported by the people of Virginia as the College of South Carolina is supported by the citizens of that State, instead of 163 Virginia youth under this Faculty, it would have 632.

The result of these comparisons is, in the view of the undersigned, conclusive of the fact which they set out to prove, viz. that the demand for an "open" system of instruction in colleges, proceeds not, as is asserted, from a genuine desire for special or partial instruction, but simply and solely from the ambition to obtain

the college stamp of scholarship, without submitting to that systematic and severe intellectual training which only can make the scholar. And it also incidentally proves, that there is in the mass of the community, after all, too much good sense, and too true a discrimination between pretense and reality, between the tinsel and the gold, to accept, as a general rule, the dispensation when it is offered; but that, in contempt of all the seducing railways to graduation which compliant Universities have seen fit to construct, the great majority still press stoutly on in the difficult but well-beaten path which their fathers trod before them, confident that their well-developed muscles and vigorous limbs will lend them, at the end of the course, an infinite superiority over those who land from the cars with scarcely the consciousness of having put forth an exertion by the way.

The undersigned are further confirmed in the conviction they have expressed as to the true object and motive of the demand for "open" systems, by the nature of the objections so continually raised against the usual curriculum of collegiate study. These objections are invariably founded on the assumed want of practical usefulness of the classics and of the higher mathematics. "It is objected that mathematical knowledge, to most students, is of little practical use. The plain rules of arithmetic, it is said, are all which most men ever find occasion to apply. * * * Why, it is asked, should a student be compelled to devote years to the acquisition of a species of knowledge which is

useful only as it enables him to advance to the study of navigation, surveying, astronomy, and other sciences into which mathematical principles largely enter; when he has no wish or expectation to engage practically in either of these sciences; and will probably, from his distaste for the whole subject, forget in a few years what he has learned with so much labor?" This is the form in which the objection to the mathematics is stated in the reply of the Faculty of Yale College to a resolution of the President and Fellows of that institution, passed in 1827, inquiring into the expediency of remodeling the plan of instruction in operation there. And in this form we continually hear it reiterated by those who, among the people, complain of the severity or the practical inutility of the plan of instruction here. What is the *man* to do—that is the perpetually recurring question—with the abstract mathematics with which you weary the youth? Will the theory of functions make him a better lawyer, or the calculus a better theologian, or analytic geometry a better merchant, than he would be without them? The objector utterly ignores any other species of benefit derivable from the study, but that which appears in the direct and visible application of the knowledge acquired to the immediate business of life. Even upon this ground, it is not difficult to meet and to answer him. Though he may not himself have occasion to employ in practice all the science in which he is instructed, yet he cannot avoid coming in contact with men whose business it is to make such applications. Is it of no importance to him

to be able to judge of men as well as of matter? Will it be of no value to him to be conscious of some power to read and duly estimate the attainments of those on whose professional opinions he may perhaps, at one time or another, be called upon to stake all that he possesses? "Granting," say the Yale College Faculty, in the reply above quoted, "that he loses from his memory many or most of the details of the sciences, he still knows where to apply for information, and how to direct his inquiries; and is able to judge correctly of the talents and pretensions of those who are prominent in any one department, and whom he may wish to employ in the accomplishment of actual business. He is acquainted in the region where he is, acts more understandingly in what he undertakes, and is found, in consequence of his knowledge, to be, in all his transactions, a more practical man."

But what if he were not? The undersigned desire to rely on no such line of argumentation as this. What if he does lose from his memory all the details of mathematical science he ever knew, above the mere arithmetic of every day? It is undeniable, and no sound reasoner on the philosophy of education ever denied, that the study of these details, if it has been diligently and not too exclusively pursued, has left behind it an effect of inappreciable value. No study can compare with that of the mathematics, in creating and fixing habits of close and concentrated attention, and of following out connected and long-continued trains of thought. Yet, without habits of this kind, what may seem to be natural gifts of the most brilliant character, may, and

will fail inevitably to produce any valuable results ; since in mind, as surely as in matter, it is labor only which builds the pyramids. Even Sir William Hamilton, in his able and in most respects, it must be confessed, just strictures upon the excessive employment of mathematical study, as an instrument of mental training, is compelled to confess its usefulness in this particular. "The study," he says, "if pursued in moderation, may be beneficial in the correction of a certain vice, and in the formation of its corresponding virtue. The vice is the habit of mental distraction ; the virtue, the habit of continuous attention." And though he maintains that "mathematics are not the only study which cultivates the attention, neither is the kind and degree of attention which they tend to induce the kind and degree of attention which our other and higher speculations require and exercise ;" and though he quotes, with his assent, the observation of Kirwan, that "there is no science which does not equally require it,"—still the experience and testimony of ages must be regarded in these particulars as an offset to his high authority ; and it must be admitted as incontestibly established, that the mathematics are the most powerful of all known instruments for training the mind to habits of undivided attention. And so long as without the power of attention, no other faculties of the mind are controllable by their possessor so as to be available for any valuable end ; it is to no purpose to sneer at this, as being in the humblest rank of mental powers, in order to bring into disrepute the studies by which it is most efficiently cultivated.

To those, therefore, who cry out for the omission of mathematical studies from the college curriculum, or for a system so conveniently open that they may be able to omit them for themselves, the undersigned would reply that the omission destroys one of the most important of the guaranties hitherto regarded as indispensable, that the course of study shall produce the result, which the University, by its diploma, is to certify to have been produced—symmetrical mental training and sound scholarship.

But if the mathematics, and especially the higher mathematics of the college course, have been subjects of attack, the ancient classics have been no less so. “It is often asked,” says President Sparks, in his inaugural address, “Why waste so much time in studying the dead languages, in acquiring Greek and Latin, which are seldom used afterwards? Why not fill up this long period with studies of *more immediate utility*, which, at the same time that they help to train the mind and form the character, communicate a knowledge of men and things, *which may be turned to account in the common affairs of life?*” In the same spirit, an anonymous English writer, in a vigorous onslaught upon classical learning, published in 1850, and considered of importance enough to be made the subject of an article in one of the leading British reviews, inquires, “Is the mere classical scholar as well fitted as persons trained in other ways, for doing the things which need be done in such times as those in which we are living? Do we find that this is the best training, in an active and jostling and

stirring age like the present, for the senate, the bar, the platform, or the press? Can the mere scholar *sway the minds of the men of Manchester or of Birmingham?*" Without stopping to remark that the men who leave the universities of Oxford and Cambridge, and who are here signalized as "mere scholars," have, for the most part, swayed the minds of the men of Manchester and of Birmingham, down to the present day, it is sufficient to observe that in these extracts and many other similar ones which might be quoted, we have still the idea standing prominently out, that the college curriculum *ought* to furnish "knowledge which may be turned to account in the common affairs of life;" and that the course of undergraduate training *ought* to be conducted with the view to turn out youth immediately fit "to sway the minds of the men of Manchester and of Birmingham." The perpetual recurrence of this idea in all the writings of all the modern advocates of new systems of collegiate instruction, is truly disheartening. The apparent absence of any just apprehension of what it is which a college, in its intention, undertakes to do, or of any sort of appreciation of the value of the object at which the college aims, make it necessary continually to fall back upon first principles, and to fritter away time and waste breath in endless explanations. The true philosophy of this subject is found so well expressed in the following passage from the able letter of President Thornwell of the S. S. College, to Gov. Manning of that State, that the undersigned believe they cannot do better than to adopt it. "The selection of studies

must be made, not with reference to the comparative importance of their matter, or the practical value of the knowledge, but with reference to their influence in unfolding and strengthening the powers of the mind; *as the end is to improve mind, the fitness for the end is the prime consideration.* ‘As knowledge,’ says Sir William Hamilton, ‘(man being now considered as an end to himself) is only valuable as it exercises, develops, and invigorates the mind, so a university, in its liberal faculty, should especially prefer those objects of study which call forth the strongest and most unexclusive energy of thought, and so teach them, too, that this energy shall be most fully elicited in the student. For speculative knowledge, of whatever kind, is only profitable to the student, in his liberal cultivation, inasmuch as it supplies him with the object and occasion of exerting his faculties; since powers are only developed in proportion as they are exercised, that is, put forth into energy. The mere possession of scientific truths is, for its own sake, valueless; and education is only education inasmuch as it at once determines and enables the student to educate himself.’ *Hence, the introduction of studies on the ground of their practical utility is, pro tanto, subversive of the college.* It is not its office to make planters, mechanics, lawyers, physicians, or divines. *It has nothing directly to do with the uses of knowledge.* Its business is with minds, and it employs science only as an instrument for the improvement and perfection of mind. With it, *the habit of sound thinking is more than a thousand thoughts.* When, therefore, the question is asked,

as it often is asked, by ignorance and empiricism, *what is the use* of certain departments of the college curriculum, the answer should turn *not upon the benefits which, in after life, may be reaped from these pursuits, but upon their immediate subjective influence upon the cultivation of the human faculties.*"

Now, considered as an instrument of intellectual discipline, the study of language has, from the earliest times been regarded as inestimably valuable. Man cannot think but in signs, and the signs of his thoughts are words. But words in their connection combine themselves according to laws, which laws inhere deeply in the nature of things, and closely connect themselves with the philosophy of the mind. It is not true, as is often asserted, that the study of language is the mere acquisition of a nomenclature, or the substitution of one nomenclature for another—a weary exercise of the memory alone, with a lexicon for a text book. So far otherwise is the fact, that there is no more improving exercise of the judgment, no better sharpener of the perception of nice distinctions, no more facile guide to the power of easy abstraction, and certainly no more rapid and efficient help to correctness, copiousness, and force of expression, than the critical study of language. If, in some of these respects, it ranks below that of metaphysics, rhetoric, or logic, in others it stands above them; and if the discipline which it furnishes is less severe, it is on that account the more desirable to retain it, as it furnishes the happiest preparation for that more trying regimen which they introduce.

But if the study of language generally has the value which is here claimed for it, that of the languages of ancient Rome and Greece possesses this merit in an eminent degree. In them those principles of the philosophy of speech, to which allusion has been made, and which constitute in their systematized form the science of General Grammar, are more perfectly and more happily illustrated, than in any other known tongues, living or dead. And not only is it true that, as languages, they thus furnish to the linguistic philosopher the most interesting, as they do at the same time to the youthful student the most improving, of all the subjects embraced in this department of knowledge ; but also, it most fortunately happens, that their literature presents the happiest examples of language in its proper use—the most unexceptionable models of historical, dramatic, poetical, metaphysical, and oratorical composition, that the world has ever seen. We have, then, in the Greek and Roman tongues, the instrument of human thought in its most perfect form ; and in the Greek and Roman classic authors, the application and the uses of the instrument in their most admirable and elegant illustrations. So strongly have these considerations impressed the educators—it may almost be said universally—of all modern time, that the perpetually recurring cry of the “practical men” of the entire century which precedes us—*Cui bono?* what will all this Latin and Greek do for us in the business of spinning cotton and raising potatoes?—has been of no avail whatever to dislodge the classics from our colleges, or even to unsettle the

firmness of the tenure by which they maintain their prescriptive prominence there. In view of these considerations, how empty and shallow does all this revolutionary clamor appear! And of how utterly trivial importance is it, whether the student who has experienced the inestimable benefits which spring from a thorough study of the "Humane Letters," remembers, or fails to remember, through all his after life, the mere facts of knowledge, which, as necessary incidentals to this training, he picked up during his student career! To an objection of this kind—and it is one of no unfrequent occurrence—may be replied, in the felicitous language of one of our own alumni, himself an honor to the system of training hitherto pursued in the University of Alabama:—"Forgotten your Latin and Greek! Well, and what if you have? Who expects you to retain, *as man*, all the 'knowledges' that you learned, *as boy*? But the discipline and refinement which those noble models of thought and style imparted, you cannot have lost. You cannot have lost that delicacy of perception, that exactness of reasoning, that distinctness of moral truth, that elegance and purity of expression, which the classics invariably bestow upon their faithful votaries. It is impossible to sit down to a symposium with the gods, and rise up wholly mortal. Like Moses descending from the Mount, you will bear, impressed upon your front, *some* of the traces of Divinity."

But it is only the very unlettered, or the very weak, who indulge in this utter depreciation of the value of

* W. C. L. Richardson, Esq., of Camden, Alabama.

classical study. There have certainly been learned and good men, who, induced by the occasional earnestness of the demand for more practical education for practical men, have consented to lend their aid toward meeting this demand. A number of the colleges of the country have presented to the applicants for admission, a choice between two courses of study—one of them that which is common in the colleges of the United States, and the other distinguished from this mainly in the exclusion of the Greek and Roman classics from the curriculum. The fact, however, that they retain these studies in either course, sufficiently demonstrates the sense they entertain of their value; a sense which, in some instances in which the opportunity has naturally arisen, they have not hesitated to express. An illustration of this remark occurs in a report presented to the Board of Trustees of the University of Rochester, by a committee of their body, in the year 1850, on the subject of the plan of instruction to be pursued in the collegiate department there. The plan recommended by the committee, in this report, which was subsequently adopted and which is now in operation, embraced the parallel "classical" and "scientific" courses described above; yet the committee, in speaking of the classics, use the following language: "They," the committee, "have no desire of detracting from the value of classical studies, and much less have they any disposition to go over the old argument upon the subject. They are *unanimously* of opinion that the critical and extended study of the languages of ancient Greece and Rome—

languages which, though no longer spoken in their original forms, are still upon the lips of many nations, and live again in several of the tongues of modern Europe, constituting an important part of our vocabulary, and affording, in the exercise of translation, a discipline of incomparable excellence in the discriminating use of words, and in all the niceties of construction; languages so copious in resources and admirable in structure, so pure in the style of the authors, and rich in a literature that can boast of the highest models of eloquence and the best specimens of poetry in all its varieties; that contains the fountains of philosophy, and is replete with the spirit of ancient civilization; that is stored with glorious examples of patriotism and heroic virtue, and adorned with the gay pictures of an imaginative mythology—is one of the most valuable as it is the most elegant of studies, to those who aim at distinguished scholarship and will devote the requisite time to their education."

In like manner, President Quincy, of Harvard, in a communication to the Board of Overseers of that institution, published in 1841, and prepared in advocacy of a plan by which it was proposed to permit an entire abandonment of the classics, at the pleasure of the student, after the completion of the freshman year, bears testimony to the great value of the studies which, in obedience to an imaginary popular requisition, he consents to see discarded. "That there are advantages in the study of the ancient languages—that they are better adapted than most other studies, to inure stu-

dents to overcome intellectual difficulties, and secure a habit of solid and vigorous application at an early period of life—that these languages are mixed, etymologically, with all the languages of modern Europe, and with none more than our own—that, as mere inventions, as pieces of mechanism, they are more beautiful than any of the modern languages—that the works they contain have longest stood the test of time, and pleased the greatest number of exercised minds—are reasons why they should be made the groundwork of the early training of all who aim at the distinction of a liberal education; and this, on the proposed system, will be effected at the schools, and in the first year in college." And, in connection with this testimony, it may here be remarked that "the proposed system," after a fair trial at Harvard, proved an entire failure. During the presidency of Hon. Edward Everett, the liberty of election between studies, or, in other words, the freedom to abandon the classics, was materially restricted; and that gentleman himself, as the undersigned state on the authority of a private letter received from him, was in favor of returning entirely to a prescribed course of study.

But while thus the value of classical study, in the subjective influence it exercises upon the student, is vindicated not only by a consideration of the nature of the study itself, but also by the testimony of judicious educators everywhere, even of those who have consented to its optional banishment from the college curriculum, it is not difficult, after all, to disprove the assertion so fre-

quently and so flippantly made, that the knowledge which this species of study furnishes to the youth, is without any practical use in later life. And here, in employing the words, practical use, the undersigned would not be understood to intend a use so intensely and literally and materially practical, as to manifest itself in superiority of skill in planting cotton, or unusual wisdom in managing stock; for if a test so gross is to be applied to the attainments of the scholar in every department, many other branches of learning beside the ancient classics will fall under the ban. But if propriety of speech, ease and copiousness of expression, and those various graces of conversation which distinguish the man of letters, may be regarded as practical benefits to their possessor, if the greater respect which they enable him to command from his surrounding fellow-men is a tribute worth receiving, if the substantial addition to his influence over others, and to his power of benefiting mankind which they bestow, be not a thing to be despised, then will the man in whose youthful culture the ancient classics have not been overlooked, carry with him to the latest day of his life, advantages derived from their study, which no sordid computation of dollars and cents can ever adequately represent.

The practical usefulness of the learned languages is also proved, by the extreme facility with which to one familiar with them, the languages of modern Europe may be acquired. It is believed that, with the opponents of classical study, the utility of a knowledge of modern languages has never been questioned—or rather

that this utility has always been a cardinal point of their creed. Now, since all the languages of southern Europe, are directly founded on the Latin, and the Latin itself is much dependent on and beautifully illustrated by the Greek, the acquisition of these latter is substantially an acquisition of all the rest. Whoever has, after a tolerable acquaintance with the ancient tongues, addressed himself to the task of acquiring the French, or the Spanish, or the Italian, or all of these languages, must have been delighted with the extreme facility with which he has found himself able to master them. Nor is this entirely owing, though it may be so in great measure, to the affiliation of all these offshoots from a common linguistic origin; but there is something in the thorough study of a language which approaches so nearly as the Latin, or the Greek, to theoretic perfection, which gives a power of mastery over all other tongues not obtainable by any other species of preparation. The following passage from Dr. Wayland's interesting work on the present collegiate system of the United States, happily illustrates this proposition. "A few years since," says Dr. Wayland, "I had the pleasure of meeting one of the most learned German scholars who has visited this country. I asked him how it was that his countrymen were able, at so early an age, to obtain the mastery of so many languages. He replied, I began the study of Latin at an early age. Every book I studied, I was made thoroughly acquainted with. I was taught to read and to re-read, translate forwards and backwards, trace out every word and know every

thing about it. Before I left a book, it became as familiar to me as if written in German. *After this, I had never any difficulty with any other language.*"*

And on this point, it may finally be added, that, in the present state of the world's literature, some familiarity with the classic authors of Greece and Rome is, to any man who aspires to the name of a scholar, simply a necessity. The literature of all modern Europe is inextricably interwoven with that of Greece and Rome—our own no less than every other. We cannot be literary men, and yet be ignorant of the classics. The idea is utterly preposterous; and all the attempts to decry the ancient learning by representing it as so much "learned lumber," and thus endeavoring to bring it into disrepute, will have no other effect than to awaken the suspicion or establish the certainty that their originators are no better scholars than they should be, themselves.

Is it possible, then, that the Trustees of this University will deliberately resolve to award the honor of graduation, to confer the diploma which, from the earliest history of colleges, has been recognized only as the certificate of genuine scholarship, upon men who willfully neglect that which always has been, and inevitably always must be, the first essential to the scholar? Is it possible that they will do this ruinous thing, at a time when the University is in the enjoyment of a sound and healthy prosperity, such as it never has experienced before; and such as, to all who have been familiar with

* Wayland on the American College System.

the early history of other colleges, is not only satisfactory but highly encouraging? Is it possible that they will do it, with the evidence before them of an entirely tranquil contentment pervading the whole people, in regard to the system of instruction in operation here; and in view of the fact that the proposition for a change, published everywhere throughout the State, has awakened only an occasional and feeble response; while it has at the same time elicited from the scattered friends of sound education so numerous and elaborate and able vindications of the existing order of things, as to prove beyond all question that the sound sense of the people is satisfied with what we have, and asks for nothing better? Is it possible that they will do this, and in doing so substitute in place of a tried and approved system, one which has not even the guaranty of past success to recommend it; but which is actually, in spite of all impressions heretofore existing to the contrary, unpopular at home, and which has, in point of fact, already broken down in every other institution which has attempted to borrow it? Surely this cannot be.

That it has so broken down, witness the statements of Dr. Manly's very able and comprehensive report, already repeatedly referred to. It there appears that, in the State of Virginia itself, two other colleges made the attempt, more than twenty years ago, to introduce the system of the State University. Of Washington College, Dr. Manly says, that "possessing an ample endowment, it had no object in the change but to *increase*

the number of students, and render itself more extensively useful to the citizens of the State." It appears that, in this institution, the attempt was made, really and in good faith, to accommodate the instruction to the varying demands of learners, and so permit each student to "study what he chose, all that he chose, and nothing but what he chose" (a respect in which we have seen that, whatever the University of Virginia may promise, or whatever its admirers may promise for its system here, it actually makes no effort to fulfill expectation); for Dr. Manly remarks that the college was soon overwhelmed by the magnitude of the task it had assumed, "it soon found that, on the new plan, its accustomed work had swelled into an intolerable burthen. With the same number of officers as before, and *no great increase of students*, the voluntary plan had so multiplied sections and subdivisions of students as to impose on some of the officers the necessity of hearing recitations incessantly, from morning till night. These small squads, having no definite amount of labor to perform in a given time, and *wanting the stimulus of numbers* (a serious want), dragged heavily through their work." It is hardly necessary to say, that after a trial of three or four years, an experiment so full of discouragement was entirely abandoned, and that "every thing was restored to its original organization."

The other example in Virginia, cited by Dr. Manly, was that of Randolph Macon College, in 1832. Of the "department method of organization," or that of the University of Virginia, here introduced, Dr. Manly ob-

serves, "*As it had a popular aspect*, the officers, when elected men of experience, entered on its administration with an honest purpose, and with the zeal belonging to a new denominational enterprise—a fresh and specious experiment. *Before the end of two years, their affairs had run into great confusion.*"

It is true that Dr. Manly says of these examples, that "remedies might have been found for a portion of the evils which had developed themselves;" by which the undersigned presume it to be meant that the students in each department might have been forced to conform to a manageable system of classification, or retire; that, in other words, while they continued to be permitted to elect their departments, they might have been deprived of any liberty of election *within the departments themselves*—a state of things which is believed actually to exist in the University of Virginia; but it is evident that the officers of these two colleges did not regard such an arrangement as an honest fulfillment of the promise which they had held out to the public, and therefore they applied no such remedy. It appears that in the institution last spoken of, "the more popular departments were obliged to distribute themselves into four classes, involving quadruple labor to the officers—and with results to each of these minor classes far from satisfactory. As subjects were taken up out of course, and advancements were unequal, students were becoming ready for graduation at different periods; and had the college followed out the unrestrained spon-

taneity of the system, they might have been asked to graduate a fragment every month."

Dr. Manly also cites the unsatisfactory results attained in a similar experiment at Geneva College, New York, in an experiment commenced about 1826. "Few," he says, "entered the classes on that [the open university] plan, who did not either retire or go into the regular course."

The experiment in our own University of Alabama, tried for about six years, between 1831 and 1837, may also be fairly cited in connection with the foregoing. It differed from the plan of the University of Virginia in very little, beside withholding the full degrees of Bachelor and Master of Arts from the students of the voluntary course; while, like that, it proposed to graduate them in the several departments separately. But no attempt was made here to accommodate instruction to the varieties of preparation of the students offering, by subdividing the classes; and this preparation was evidently in many cases very meager. The consequence was, the great degradation of the standard of attainment, and the growth of habits of idleness and vice, which terminated at last in uncontrollable insubordination. Of this experiment, the Faculty of the University, in the letter addressed to the Hon. W. K. Baylor, quoted earlier in the Report, speak as follows: "Did it [the voluntary system], while increasing the number of the students, elevate the character of the college, or promote its prosperity, or enlarge the sphere of its usefulness? The reverse of all this is notoriously true.

Day by day, the standard of attainment in this college sunk lower and lower. Hour by hour disaffection grew, among students occupied but a portion of their time, and left for the rest to that idleness which, with the young and inexperienced, is but another name for incipient vice. The disasters which early befell this institution, were certainly in a measure chargeable upon its officers; but we must not forget that, at the same time, they were in a measure attributable to the system which those officers were compelled to carry out."

About the time of the publication of Dr. Manly's report, it was understood that a new university, on the entirely open plan, was going into operation at Cleveland, Ohio. Upon the appointment of this committee, the undersigned lost no time in addressing a letter to the president of that institution, soliciting information in regard to its success; but up to the date of this Report, they regret to say that they have received no reply."*

If the entirely open university system has thus resulted in miserable failure wherever it has been tried, it has fared scarcely better with those schemes for the sys-

* Since the above was written, a letter received from President Mahan states that, owing to some unfortunate litigation, the operations of the university were suspended about a year after the opening; and that they have not yet been resumed, though they probably will be so in a few weeks. The results, so far as they went, appear to have encouraged the friends of the institution, and to have given them confidence in their plan. The conclusion of the letter is in these words: "For the reasons stated above, however, you will readily perceive that we cannot speak from extended experience; and this is the only form of experience on which safe reliance, aside from the considerations of the laws of mind and the wants of the age, can be placed."

tematic proscription of classical studies provided in what are called the "scientific courses" of several of our colleges. Such courses are offered at Union College, and at the Rochester University, New York, and at Brown University, Rhode Island. Such a course, after the freshman year, was also, some years since, offered at Harvard, Mass. The result at Harvard has already been stated, by anticipation. Nothing remains of the scientific course there but a restricted liberty of election of certain branches of the mathematics, in place of either ancient or modern languages, during the junior and senior years. The catalogue of the Rochester University does not distinguish to which of the courses individual students belong, nor give the totals in each; but an interesting letter from Prof. Dewey, of that institution, himself strongly in favor of the plan in operation there, and one of its originators, furnishes evidence that the scientific course has not yet secured any very firm hold upon the public confidence or approbation. "The two courses, classical and scientific," writes Prof. Dewey, "which you will see in the catalogue, you know are not new. Union College and some others have adopted similar plans, and find, I believe, the same difficulty in the execution. We cannot keep any number in the scientific course. I did suppose that many, who did not wish Latin and Greek, would avail themselves of this course. Some have done so, but only a few; and many of those entering on it have afterwards taken Latin and Greek, and fitted themselves for the classical. So far as we have had scholars in the scientific, the plan has operated well.

Now we have only very few, not enough to make much effort necessary. The power of public opinion in favor of the learned languages, and of the usual college course, entirely controls our youth ; and I am pained to see, what I did not expect, the scientific course without many applicants, and even with very few. This is the result here." Yet certainly it has been under the pressure of a presumed force of public opinion in derogation of the learned languages, and in opposition to the usual college course, that these new systems of collegiate study have been originated ; and the fact that the public will not, after all, patronize them when presented, is a satisfactory demonstration that public opinion on this subject has been misapprehended.

Union College, in its catalogue for the third term, 1854, has a total of two hundred and forty-one students, of whom nineteen only are in the scientific course. In the freshman class, not a single individual belongs to that course ; and in the junior class, there are only two.

In regard to Brown University, the undersigned have no later information than that furnished by the report of Dr. Manly. Although, directly after their appointment, they addressed Dr. Wayland, soliciting from him some statement as to how far his anticipations had been realized in the subsequent actual working of his system, they have not yet been so fortunate as to receive his reply. In this, and in several other instances, in which their inquiries remain equally unanswered, it is probable that the unfavorable season of the year in which they were made, while most of the colleges of the country

are resting from their labors, and their officers are probably dispersed, has prevented their letters from seasonably reaching their destination.* According to the report of Dr. Manly, out of the total number of students in the first term of 1852-3, there were forty-five per cent. studying Latin, and twenty-seven per cent. studying Greek. In order to understand the significancy of these numbers, it must be observed that the catalogue embraces students of one, two, three, and four years' standing, while the courses of Latin and Greek study cover only *two* years. In the fourth year, the ancient

* The commencement at Brown University was this year holden on the 6th of September, inst. According to the published reports, the degree of Master of Arts was conferred on twenty-three young men; that of Bachelor of Arts on eight; and that of Bachelor of Philosophy on seven—the first being a four years' course, and the other two being each courses of three years. The total number of graduates is, therefore, this year, only thirty-eight, of whom twenty-three take the classics in full; eight take them in full or in part; and only seven not at all. The suffrage at Brown University is, therefore, more than four to one in favor of classical learning. Yet this college makes the experiment under circumstances of advantage thus signalized by Dr. Manly in his report: "How much is peculiar here! The reputation and energy of the distinguished president; the enterprising character of the population of New England; and the degree to which the results of science are immediately wanted in the new and varied employments actually going on around; the fact, too, that it is the only institution already possessed of age and standing which has adopted these new and promising features;—all together, have given that institution an increase of numbers which no other sphere and no other circumstances could supply. In a densely peopled region, already educated above the average, eagerly pressing on the means of subsistence, of accumulation, or of fame, quickened to scientific inquiry by the direct superiority which science gives to the emulous votaries of the productive arts—this institution has opened all its treasures. Need we wonder at the effect produced by the glittering prize? Should we anticipate similar results under circumstances totally different, we might be greatly disappointed." Yet apparently these results are not, after all, especially brilliant.

languages are studied by none (so it appears, at least, from the only catalogue at hand). In the first year, a large majority take Latin, and a smaller number Greek. In the second, out of the forty-three students (catalogue of 1850-51), there are only *five* who do not take one or the other; and in the third, about one-third part take Greek, while Latin disappears. The results, therefore, of experiment at Brown University, so far as we have them, serve most explicitly to corroborate the inferences which have already been drawn from those previously examined.

If, finally, appeal be made to the catalogue of the University of Virginia itself, where the utmost freedom is allowed the student in the selection of his studies, we shall find the weight of evidence still leaning the same way, and tending to demonstrate the fact that the people *will* not abandon the Latin and the Greek. In each of these languages, the course of that University covers two years only; and it is presumed that there, as elsewhere, the two may be pursued simultaneously. Now, if from the total of the catalogue for 1853-54, which is 466, we subtract 199 students entirely professional, there remain 267 students under the Faculty of Arts. Of these, 176 are in the department of ancient languages, and 156 only in that of the modern. In mathematics there are 179, and in chemistry 220, many of the medical students taking this department; while in the remaining departments of natural philosophy and moral philosophy (the latter comprehending also metaphysics, rhetoric, logic, criticism, and political economy), the numbers fall

as low as 106 and 112 respectively. It appears, therefore, that in this University, in which students who aim at education remain three or four years, while the classical courses are completed in two, the proportion of the whole number (two-thirds) who, by the latest catalogue appear to be studying the learned languages, is so great as to indicate that nearly all, at one period or another, enroll themselves in that department.

The undersigned feel themselves, therefore, fully sustained by the unvarying testimony of facts, taken wherever they can be found, when they assert that there is really none of that aversion to the learned languages, or distaste for them, and none of that conviction of their want of practical utility, of which we hear so much, as being widely spread and deeply rooted among the people. There is none, at least among those who desire to be liberally educated, whether we include only such as submit themselves to the routine of study prescribed in the close colleges, or whether we leave the decision to the results of free volition, and confine our scrutiny to the most widely open universities of the Union. Nor is the ordinary college curriculum, as a whole, disapproved by the great majority of the people, or even avoided by any large proportion of students themselves, when the choice is in their hands. "It is found," says Dr. Manly, "that those [colleges] whose course of studies is fixed and uniform for all, have adopted such a course that, when the largest practicable liberty of selection is allowed, *not less than three-fourths of the students voluntarily fall into it*, as on the whole the best; and that

this proportion, with larger experience, is of late years increasing."

That there should be, nevertheless, a good deal of uttered discontent with college courses of study, is not surprising. For thirty years or more, it has been heard, sometimes in one part of the country and sometimes in another, always dwelling upon the same alleged evils—the tediousness and long duration of the course; the unpractical character of the studies; the sad waste of time expended over classic lore and the higher mathematics; the absolute neglect to impart that training which shall prepare the student, as he emerges from the institution, to grapple at once and familiarly with the affairs of life. But in this there is nothing which ought to surprise. "With the present century," says Dr. Wayland, in his report of 1850, "a new era dawned upon the world. A host of new sciences arose, all holding important relations to the progress of civilization. Here was a whole people in an entirely novel position. Almost the whole nation was able to read. Mind had been quickened to intense energy by the events of the Revolution. The spirit of self-reliance had gained strength by the result of that contest. A country rich in every form of capability had just come into their possession. Its wealth was inexhaustible; and its adaptation to the production of most of the great staples of commerce unsurpassed. All that was needed to develop its resources, was well-directed labor. But labor only can be skillfully directed by science; and the sciences now coming into notice were precisely those which

the condition of the country rendered indispensable to success. *That such a people could be satisfied with the teaching of Greek, Latin, and the elements of the Mathematics, was plainly impossible.*" Here, then, is the source of an early dissatisfaction with colleges, against which, as Dr. Wayland proceeds to show, these institutions endeavored to bear up—not by abandoning what they had taught before, but by "adding science after science to the course, as fast as the pressure from without seemed to require it." But, in the mean time, they have not extended the duration of the period of instruction. Had they done so, they "must have encountered the common prejudice in favor of a four years' course." In consequence of this, according to Dr. Wayland, into the particulars of whose calculation it is unnecessary to descend, the average length of time which can be devoted to each several subject of study (apart from the Greek and Latin) in American colleges, is but a fraction over six weeks. Hence has arisen a new dissatisfaction, which has had its special and local manifestations of activity, at different times and in different quarters, during the last half-century. It is, in the first place, a natural outbreak of that restless spirit of the age, which chafes impatiently with the desire to grasp results without submitting willingly to the labor necessary to prepare them. But it is, in the second place, a feeling of well-founded distrust of the possibility of teaching with thoroughness so much as is now attempted, in so little time. And in attempting so much, it is to be apprehended that colleges have themselves done a great deal to turn

away public attention from the true and fundamental object of collegiate education, and to encourage the idea that it is their duty to train youth with special reference to what are to be their pursuits in life. No such encouragement is necessary from such a source. The idea is, to far too great a degree, spontaneously current. And to this, after all, with perhaps that entire but very prevalent misconception of the distinction between education and instruction, which so often manifests itself in what is written on this subject, may be mainly ascribed the earnestness with which the university system of this country has been so perseveringly assailed. "A mere knowledge of facts and things," says President Sparks, "is too often looked upon as the *ultimate end* of education; whereas it is little less than *an accident*, the natural result of the discipline and training requisite to form an educated man. It depends on the single faculty of memory, which often exists with surprising activity, where the other faculties are languid or obtuse. Knowledge of *principles and causes* is the fruit of experience, observation, thought, solid and abiding, deeply wrought into the mind till it becomes an assimilated part of the intellectual man. *This* is the work of education, and its chief work."

The unreasonableness of expecting our colleges, whose proper business is, and has been from the beginning, to do this work of education proper, to provide also, in the brief space of time allotted to them with their pupils, that professional or technical training which shall prepare them to engage directly in the business

of life, has been already sufficiently considered. But to what has been said may very properly be added the important consideration suggested by the question, How much, after all, could the college accomplish, provided it were converted altogether into a school for the study of professions and of the practical arts of life? Received, as the students of all American colleges are received, with a very humble preparation, and in most instances with no established mental habits, or with very bad ones, they are not fit—at least as a general rule—to be directly introduced to the study of those professions or arts which are to occupy them in actual life. If it be replied here, that the proposition is not necessarily to introduce them to those studies thus directly, but only to make their elementary training of such as are manifestly subsidiary or fundamental to them, the rejoinder may be that the entire college course contains nothing which is not subsidiary to the successful study of any profession; and that, if the intention be to indicate those studies which have a direct affinity with the intended pursuit, the objection to their exclusive use is the serious one, that they will inevitably prevent the equal development of the faculties, and end in producing an unequally balanced mind. Yet, waiving every objection of this nature, what, after all, can the college do, at best or at worst, toward turning out a practical man? While time lasts, the farmer will continue to be made in the field, the manufacturer in the shop, the merchant in the counting-room, the civil engineer in the midst of the actual operations of

his science. The well-educated student, when he receives his diploma, is fitted, indeed, to enter upon any of these scenes of labor, and is capable, by his own independent effort, of perfecting himself in the knowledge and the skill which they demand; but to expect, by any kind of college training whatever, to furnish him with the ability or inspire him with the confidence to stand forth as a master of any one of these or similar professions, is entirely unreasonable and preposterous.

There can be little doubt that much of the bias in favor of open universities for the instruction of youth and men in all descriptions of knowledge, has grown out of the vague and generally erroneous notions floating through the country, in regard to the character of the universities of Germany. These institutions are substantially professional schools; and if any of their students are engaged in pursuits merely literary or scientific, those pursuits are of an order much less elementary than such as occupy the young men in our colleges. "The institution in Germany," observe the Faculty of Yale College, in their report already quoted, "which corresponds most nearly to our college, is the gymnasium. The universities are mostly occupied with *professional* students. In Halle, for example, of eleven hundred students, all except sixty are engaged in the study of theology, law, and medicine." As to the actual amount of instruction given in the gymnasia, the unpublished pamphlet of Bishop Potter, mentioned in a different part of this Report, cites, from the Report of Prof. Bache, on the State of Education in Europe, the

examples of three Prussian gymnasia, two in Berlin and one at Pforta, "as *representatives* of the instruction of the kingdom, preparatory to the university course." From these examples it appears, that "the pupil in two of these German gymnasia studies nearly if not quite as much mathematics as in our [Pennsylvania] University, and makes respectable proficiency in Physics, Physical Geography, Mechanics, and Chemistry. In that which concedes the least time to science (Pforta), he is taken into Conic Sections, the Diophantine Analysis, Trigonometry, Physics, Magnetism, &c." And in regard to Latin and Greek, and also Hebrew, the instruction is more thorough than is probably furnished in any of our colleges.* No argument; therefore, can be drawn from the educational institutions of Germany to ours; or if such a one should be attempted, it ought to be rather for the creation of a new and higher description of schools, to which none but those who have completed the usual course of college study should be admitted, rather than for the conversion of our existing colleges into what in Germany would be mere nondescripts, having the form of the university and the grade of the gymnasium.

There is, moreover, reason to believe that the word university, in its popular acceptation in this country, has had something to do with promoting the bias of which mention has just been made. This word, says Sir William Hamilton, "in the language of the middle ages, was applied either loosely to any understood class

* Princeton Review, Oct. 1852, and Oct. 1853.

of persons; or strictly (in the acceptation of the Roman law) to a public incorporation, more especially (as equivalent with *communitas*) to the members of a municipality, or to the members of a ‘general study’:—*studium generale*, “the oldest word for an unexclusive institution of higher education.” Thus the name university denoted the entire body of persons engaged in study, under a given organization, and not, as it is now commonly understood, the entire circle of possible subjects of study:—it was *Universitas doctorum et scholarium*, and not *Universitas scientiarum*. It further appears, according to the same authority, that “it was the common custom to erect a university in only certain Faculties; and not unfrequently a concession of the others was subsequently added.” Instances are cited of universities established without any Faculty of Arts, and of others in which one or more of the higher Faculties were originally wanting. The mistake in regard to the meaning of this word, which in England has led to consequences of serious practical importance, and occasioned the agitation of legal questions of moment, has in this country been productive of the less grave but still annoying evil of aiding to promote those movements which have had for their object the breaking up of the established collegiate system. It may seem strange that a mere question of verbal definition should exercise any important influence in a question of this kind. To a thoughtful mind it would seem that, if the common acceptation of the word were a correct one, then in its application to the institutions which we

call universities it is a misnomer, capable of being corrected by the simplest of all possible processes, the adoption of a new name; but by no means involving the absurd necessity of remodeling the institution to suit the word. It has nevertheless had its effect; and this rarely fails to be perceptible, in any argument put forward in favor of changes like that which is now urged upon the University of Alabama.

In conclusion, the undersigned cannot but believe, that, on questions of this kind, some consideration is due to the weight of authority. The most eminent educators of youth in America, are almost with one voice opposed to a system like that of the University of Virginia, for American colleges. The Faculty of Yale College, at the time of the publication of their ably argued letter to the trustees of that institution, from which repeated quotations have been made in this Report, embraced some of the most distinguished and experienced instructors whom this country has produced; among whom we may especially signalize President Day, and Professors Kingsley, Silliman, Goodrich, and Olmsted.

It is certain that no college in the United States has ever commanded a higher respect, or possessed a more extended popularity, than this. And it is remarkable that though it was among the first—perhaps quite the first—to take a public and decided stand in opposition to the views of those who would break up the existing college system, and especially of those who would discard the learned languages from the curriculum of

college study, yet no period of its whole history has been distinguished by a more signal prosperity than that which has since elapsed. At no time have the Faculty of that celebrated institution shown the slightest disposition to descend from the high position which they assumed in 1828; and a recent letter received from Dr. Woolsey, the accomplished scholar who at present presides over it, accords entirely with the views which have been expressed in this Report. "We have ever," writes Dr. Woolsey, "been averse to the system pursued at Charlottesville, on the ground principally that students, at that stage of their education when they are in college, are incompetent to choose what they ought to study; and on the ground that, at that season, there is need of drilling and close examination—of a daily responsibility—habits of study being yet unformed, and immediate motives being needed to put young minds at work. It is surprising how much stronger a motive acts in professional study than in preparatory; the student in the former case feeling that success in life is in a good degree connected with his diligence, and by no means so much in the latter. Hence we are disinclined to an optional and to a lecture system. We would introduce both sparingly, and toward the close of a college life. And indeed a lecture system, without frequent examination, is of small account."

Dr. Woolsey then proceeds to consider the objections which are usually urged against the existing system. He observes, "There are two principal ones, 1st, that

students will not study what they do not like; and 2d, that there is an inaptitude in some for certain branches. To which may be added, that the course from the first may be accommodated, on the optional system, to the profession chosen. In reply to the last objection, we say that the discipline of languages and mathematics, and of moral science, is too evidently needed by all to allow us to doubt that it is, in the main, the correct system. The one-sidedness of men educated only (for example) for and in physical science, is quite apparent.

"There is real force in the other objections. Students cannot, as you must know, sometimes, be found to take hold of mathematics or Greek; and a college life does some, therefore, but little good. Others are incompetent, or nearly so, to master one of the disciplinary studies. The question arises, Is it desirable to modify the system for this sort of minds? How much will they gain on any system? Many of them very little. For the rest, I would have a certain optional system, say after half an academical life is over, in which hard mathematics could be chewed by those who don't like Greek, and hard Greek by those who don't like mathematics. You will see that we are old Fogies here. *Nolumus leges Angliae mutare.*"

The position of Hon. Edward Everett, former President of Harvard University, on this question, as indicated by himself, has already been given. That of Dr. Walker, the present able head of the same University, is expressed in a letter holding the following decisive language: "We are far from wishing to prejudge the

result of the experiments which other colleges are trying. Our own experience, as far as it went, has satisfied us that, in American colleges, neither the age, nor the proficiency, nor the number of the students, nor the number of the teachers, are such as to make the introduction of an unrestricted elective system either advisable or practicable. Merely to arrange the hours of recitation on this plan so that they shall not interfere, and yet secure to each student his share of attention and keep him properly employed, will be found to be an almost insuperable difficulty. Most of the objects aimed at by the voluntary system, are more effectually and satisfactorily reached, as we think, by scientific and professional schools connected with the college proper."

Bishop Potter, of Pennsylvania, whose large experience as an officer and a trustee of several colleges, and whose signal ability and ardent zeal, displayed in the cause of education, entitle his opinion to the highest respect—who, it may be added, is also an earnest advocate of the open university system, in its proper place ; and that is, “where young men, older and better trained than our ordinary collegians, with more active desire for improvement,” and “where graduates of our colleges, and other young men bent on gaining knowledge,” can be relied on to apply for its advantages,—concludes an interesting letter on this general subject, in these impressive words :—

“The attempt to popularize a college, is too often an attempt to extinguish its collegiate character, and

transform it into a high school. The classics are not taught as they should be in our colleges; and the great reason is, that too much time is given to other studies. In connection with the moral sciences, they are still, in my judgment—when well taught—the best gymnastic for the production of a high culture, such as we must have in the United States, if we mean to advance the great work of Christian civilization, and raise up divines, statesmen, and patriots, such as we need, perhaps, more than any other nation in the world."

Hon. Theodore Frelinghuysen, long Chancellor of the New York City University, and now President of Rutgers College, New Jersey, speaks thus: "The plan of remodeling our colleges *for the times*, is, in my poor judgment, very unpromising to the interests of a sound education. It should be borne in mind, that the old time-honored system furnishes to the student the elements of every art and science that the modern activity of the mind has called into prominent notice. The benefits to be derived from classical studies (the dead languages, as they are called), are so rich and various, that it would be a calamity to put them aside. They discipline the mind and strengthen its powers, while they purify the taste. And moreover, we must rely upon them for the knowledge of our own language. The classics, like the works of the great artists of other times in painting and sculpture, are to be studied for their purity, and will abundantly recompense the student. I hope they may still have a full share of the college course. They should be studied, if never opened

again in after life. Much of the benefit will live after them."

Dr. Thornwell, President of S. C. College, in his letter to Gov. Manning, already quoted from, expresses himself on the subject of two changes which had been proposed in that institution—the first being to introduce, substantially, the Virginia scheme; and the second to permit students to confine themselves to special branches of study—as follows: "In the first place, young men are incompetent to pronounce beforehand what studies are subjectively the most beneficial. It requires those who have experienced the disciplinary power of different studies, to determine their relative value. Only a scholar can say what will make a scholar. The experience of the world has settled down upon a certain class and order of studies; and the verdict of ages and generations is not to be set aside by the caprices, whims, or prejudices of those who are not even able to comprehend the main end of education. In the next place, if our undergraduates were competent to form a judgment, their natural love of indolence and ease would, in the majority of cases, lead them to exclude those very studies which are the most improving, precisely because they are so; that is, because in themselves and in the method of teaching them, they involve a degree and intensity of mental exercise which is positively painful. Self-denial is not natural to man; and he manifests but little acquaintance with human nature, who presumes, as a matter of course, that the *will* will choose what the *judgment* commends. *Video meliora proboque, deteriora*

sequor, is more pre-eminently true of the young than of the old. They are the creatures of impulse. * * * Easy exercises are preferred, simply because they do not tax the mind. The practical problem with the mass of students is—the least work and the easiest done. Is it easy? Is it short? these are the questions which are first asked about a lesson. I must therefore consider any attempt to relax the compulsory feature of the college course, as an infallible expedient for degrading education. The college will cease *to train*. It may be a place for literary triflers, but a place for students it cannot be."

And again: "With respect to the other change, that of allowing students under certain circumstances, to pursue a partial course, it is evidently contradictory to the fundamental aim of the college. These students are not seeking knowledge for the sake of discipline, but with reference to ulterior uses. They come not to be trained to *think*, but to learn to act in definite departments of exertion. It is *professional*, not *liberal* education which they want. The want, I acknowledge, should be gratified; it is a demand which should be supplied. But the college is not the place to do it. That was founded for *other* purposes, and it is simply preposterous to abrogate its constitution out of concessions to a necessity, because the necessity happens to be real. What therefore ought to be done is, not to change the nature of the college, but, leaving that untouched to do its own work, to organize schools with special reference to this class of wants."

The following emphatic expression of opinion, is from Dr. Church, whose great experience at the head of the University of Georgia, where the voluntary system in one form, has long been subject of experiment, entitles it to much weight: “*Far* the larger number of students who enter the colleges of the United States are, I apprehend, too young to be thrown upon their own responsibility in a matter of so much importance as their education. They are incapable of judging what is best for their mental and moral culture. Leave them to elect the studies which they will pursue, and much the larger portion will take what they consider the easiest and pleasantest course. Leave them to study or not to study, and most will prefer the pleasant circle of friends, to the labor and self-denial necessary to profitable mental culture. * * * Study is labor; and but few will, at the age at which most of our college students enter our institutions, bend the energies of their minds to the acquisition of knowledge, if left wholly to themselves. The Virginia system was intended, I suppose, by its illustrious founder, for *men*—not *boys*. It would answer well for our best scholars, who wish to prosecute their studies after having gone through a good collegiate course. Till the young man is about twenty-one, I am of opinion that it is the great business of education to develop and to properly discipline his intellectual and moral powers and susceptibilities. I apprehend that our usual course of study is as well calculated to do this as any which has yet been suggested. And if, in the common college course, and under the usual discipline, all

cannot be influenced to apply themselves in such a manner as to be greatly benefited, a much larger number will than under a merely voluntary or elective system."

Dr. Church, it will be seen, speaks of the elective system, as if the uncontrolled election of studies were vested in the student himself. It has been sometimes assumed that the manifest injudiciousness of such an arrangement might be obviated, by putting the election in the hands of the parent, instead of those of the student. In nine cases out of ten, however, this regulation is experimentally proved to be inoperative; and the result has been found to be precisely what would have occurred without it. The election is *always*, in any institution which allows election at all, in the parent's hands. If he takes the interest he ought to take in his son's education, he will use it without being required to do so by any college law; if not, he will use it to give the sanction of parental authority to the student's choice.

Dr. Swain, the distinguished President of the University of North Carolina, is no less decided in favor of the views which this Report has presented, than any other of the distinguished authorities already cited. "Mr. Jefferson's original conception of the University of Virginia," writes Dr. Swain, "with the exception that it was somewhat in advance of the age, was an admirable one. His design was to establish a system of schools, in which young men who had completed the usual course of scholastic training, might have an opportunity to review all their studies, and push their researches in

every branch of literature and science to a greater extent than was practicable elsewhere. Experience has shown, that there is too little wealth and too little learned leisure in the country to afford the requisite patronage to an institution of so high a grade. There may be, by the close of the present century, but there is not now. Instead of scholars resorting to that institution to enlarge their attainments in philology and the severer sciences, young men imperfectly acquainted with Webster's spelling-book press there, to enter upon the elements of arithmetic and English grammar. A few, and but a small proportion, go with better preparation and more extended views, become candidates for degrees, and make valuable attainments. The University has unquestionably rendered eminent service to the country, by training a few ripe scholars; but whether the good is not counterbalanced by the evil inflicted, in sending forth a multitude of sciolists bedizened with her livery, is an inquiry entitled to more consideration than it has received. The success of the institution in securing patronage, is not unfrequently over-estimated. With all the advantages of prestige attached to the names of Jefferson and Virginia, with an ample endowment, an able Faculty, in the midst of a numerous population and great wealth, a comparison of catalogues during the last twenty years will probably satisfy you that the number of undergraduates proper has not been greater there than here. It is the schools of law and medicine, which have given the great prominence in numbers, and not the regular academic corps."

And, in regard to what is said of the demand for "practical education," Dr. Swain observes,—"In my judgment, no system of education can claim to be practical, in this country and at the present age of the world, of which thorough instruction in the learned languages and the mathematics does not constitute the substratum. You may add any amount of attainment in modern languages and natural and experimental science, that increasing wealth and leisure may permit; but the former can never be dispensed with."

In fine, the President of our own University, after patiently and laboriously looking into all this subject, only two or three years ago, at the request of the Board of Trustees, announces the conclusion to which the investigation has driven him, in the following passages of his report: "It is obvious that, while experiments among the colleges, for meeting the public demand, have been innumerable, the new system (as it is called) has not generally secured the approbation of educators."

"Voluntariness in the selection of studies cannot be complete and absolute under any system." "Those [colleges] which aim at specific adaptation to the business of life in the courses of study, and lay claim to the greatest voluntariness and the nearest approximation to the wants of the age, and accommodation to the individual, are obliged, *practically*, to admit that a specific education, without the main features of the old college course, is necessarily one-sided and imperfect." "The 'partial course,' which does not lead to a degree, is an acknowledged failure everywhere, not much sought,

and attended with but little satisfaction to any party. The creation of a new degree which may be reached without classical attainments, and the separation of old degrees so as to admit of less classical study in some cases than formerly, are expedients intended to apply the stimulus of collegiate honors without the aid of the inspiration drawn from classic fountains. As experiments, they are too recent and too limited to show the effect on members or mental culture." And finally: "As an expedient for increasing numbers in this institution (extending its benefits to a greater number of the citizens of the State) a change of organization is deemed questionable. * * * The statistics in this report have already furnished proof of the fact that efforts of this kind, intended to *popularize* institutions, have not replenished them; that costly arrangements, adapted both to general and individual wants, have attracted but a scanty increase; while, in a noted instance, the fullest classes have been those of the old college system."

That the weight of authority, no less than the deductions of reason, is entirely opposed to the expediency of a change in the college system of the country so radical as is proposed for this University, cannot, therefore, be questioned. Yet that the system admits of improvement, its friends have nowhere attempted to deny. The great burthen of studies which at present presses on the course, the evil of which Dr. Wayland has so ably exhibited, ought in some manner to be disposed of. We must come back to the simple idea of the original

college, and endeavor to restrict these institutions to the discharge of their proper function of *education*; leaving mainly to special institutions connected with colleges, as suggested in the letter of Dr. Walker, or separate from them, the business of supplying facts, information, knowledge for its uses—that is to say, all *instruction* designed simply as such. Bishop Potter, in his remarks at the close of the debate on college systems at the Cleveland convention, indicates what to the undersigned appears to be the course which true wisdom would dictate. “Were the speaker,” he said, “called to reconstruct the *course of studies* in colleges, his motto would be *multum, non multa*. He would greatly diminish the number of studies which *all* must pursue. These he would have taught for a much longer time, much more thoroughly, and in a more scholar-like way. Certain other branches, such as Natural History, &c., he would *make accessible* to all, through the ablest and most brilliant professors, delivering short courses of lectures on the rudiments. Other branches he would reserve for those who had special qualifications, who would pursue them eagerly and spontaneously.” The idea of Prof. Potter, in regard to the lectures on special subjects, above hinted at, is that the most eminent professors in these branches might lecture, by arrangement, in many colleges to which they are not specially attached; his impression (a very just one) being, as he expresses it in a letter, that, “to a young man who has reached the last year of his college life, one month of intercourse with a great master in

any branch, is worth more, in the way of permanent incitement and impulse, than many months of study with an inferior teacher." But leaving this topic aside, it is evident that the plan which he suggests for the relief of colleges under the oppressive weight of the great mass of matter which they attempt to teach, is the only true one, the only one from which relief *can* come. The sole alternative is to lengthen the period of collegiate training and instruction—an alternative to which, evidently, the people will not submit. If, in the progress of time, it shall become possible so to elevate the requisitions for admission into college, as to throw back much of the elementary training upon the preparatory schools, and if these schools, in this country, shall ever be brought up to the grade of the German gymnasia, or anywhere near it, then indeed we may reasonably hope to teach in our colleges, and teach well, all which we now attempt to teach, and it is to be feared too often teach ill. That state of things can only supervene by degrees, and can only be a reality in the distant future. It is our business to legislate for the present.

In regard to our own University, in case a reorganization of the plan of instruction be resolved on, the following, in the opinion of the undersigned, are the principles according to which it should be regulated:—

1. To prescribe a definite curriculum of study, designed as a mental discipline, to extend over the entire four years, and to which all regular candidates for graduation are to be required to conform. In this,

however, to include only those branches of study, or certainly very few but those, which, by the consent of the learned of all ages, are entitled to be regarded as the best instruments for evolving and exercising the powers of the mind.

2. To embrace all the remaining studies of the course, which are thus thrown out, in a group, out of which the Faculty may, at the proper time, select such as seem fittest to the intellectual wants of each individual student, as ascertained by the observation of his tastes, mental habits, and actual attainments during the earlier years of study; and to provide for his instruction in these, without exacting from him, as at present, attention to the whole number.

In the application of these principles, it seems to the undersigned advisable that, during the first two years of the course, no study should be introduced which is not obligatory upon all the students. The present arrangement of the hours at which the daily exercises occur, need not therefore of necessity be interfered with. Whether or not that is the best arrangement, the undersigned do not undertake to pronounce; but at present they see no reason to recommend any alteration in this respect, in regard to this part of the course. Should, however, any portion of the studies of the junior and senior year, or of either, be made elective, it will probably be found convenient to assign recitations or lectures for these classes in some branches at other hours, additional to those fixed by the present regulations, and without disturbing the latter. What

particular distribution of time may be best adapted to secure all the ends aimed at by this new system of instruction, it will perhaps be best to leave to the more mature deliberation of the Faculty. A table of exercises, or *roster*, herewith submitted, may be regarded as simply in the light of a suggestion for the purpose of inviting amendment, than as a positive recommendation.

Should a reorganization of the plan of instruction on these principles be resolved upon, it becomes important to decide what studies shall be placed in the elective group. To this class, it appears to the undersigned, that there can be no hesitation in referring,—

1st. All such as deal principally in facts of observation;

2d. Such as require a peculiar natural aptitude for their successful prosecution; and

3d. The study of the languages, ancient or modern, pursued beyond the limit prescribed by the obligatory course.

Under the first head may be included all the branches of natural history, and also geology, mineralogy, physiology, meteorology, and, possibly, a second course of chemistry.

Under the second may be embraced all the branches of the mathematics which rest upon the algebraic, or symbolic, method (elementary algebra excepted), and embracing in the existing course, algebra applied to geometry, analytical geometry,

and the calculus, differential and integral; to which may be added spherical trigonometry.

The third requires no specifications.

The undersigned design to enter into no argument as to the propriety of the distinctions which they have thus made between the subjects now overloading the curriculum of college study. Since it is an admitted fact that no student can possibly now be thorough in all of them, limited as he is to the very few weeks which can only be given to each, according to present arrangements, it can be no serious objection to the proposed plan to say, that it must necessarily cut off every student from something. That is very true; but it is equally true that the entirely voluntary system permits him to do the same for himself; and what is more, makes it nearly certain that he will do it, while it fails to guaranty to him a systematic intellectual training at all.

The studies which will remain obligatory upon every individual, after those above specified are excluded from the regular course, are such as are universally regarded as furnishing the best discipline of the mind and the most equable exercise of the various faculties; and such as, at the same time, by a consent almost universal, and quite so if we except the learned languages from the list, are esteemed as being in themselves attainments absolutely indispensable to every man of education. Moreover, in regard to the learned languages, it has already been shown, that the dissent just hinted at, is actually more imaginary than

real, that it is limited to a very small number of persons, and that in this number we find hardly a single name of any authority either in the great field of education, or in the world of letters.

By the adoption, then, of a system of instruction founded on the principles above stated, and in its practical application securing instruction, in any of the branches of knowledge which usually form a part of every collegiate course, to those and those only who are likely to derive positive profit from their study, while all are equally subjected to that thorough education of the mind which it is the proper business as it was the original design of the college to bestow, it appears to the undersigned that whatever is objectionable in the existing system may be eliminated, without putting at hazard the sound prosperity of the institution by changes unnecessarily large and startling, and which, whatever confidence in their wisdom their immediate advocates and friends may entertain, are certainly regarded with anxious distrust by a large proportion of our most judicious and thoughtful fellow-citizens.

If along with the change here proposed, some attention be paid to certain matters of detail, in regard to which amendment appears to be possible, the efficiency of the whole system, in the opinion of the undersigned, cannot fail to be materially improved. The honors and distinctions now awarded by the University, depend on a method of estimating scholarship by giving a numerical value to every performance, and preserving a record of every exercise corresponding to its adjudged

merit. To the undersigned this method appears to be faulty in two particulars: first, it is a departure from the sound principle on which the prerogative of granting degrees was designed to be exercised by universities—and that is, that none should be admitted to the honor but such as should be found, by thorough trial, to be actually possessed of the required attainments at the time of receiving the degree; and secondly, it does nothing to stimulate, and in fact it does sometimes appear to deaden, that honorable pride of scholarship, which, to the generous youth, is one of the most powerful incitements to intellectual effort.

In regard to the first particular, it may be said that the present marking system tends to induce a habit of "studying up" or "cramming" for the immediate recitation, without regard to such a thorough understanding of the subject, as shall fix it permanently in the mind. And to this may be added, that, by making the recitation of the day or of the hour the all-important object, its influence is to interfere with the formation of comprehensive or connected views of a subject of study as a whole, or the mutual dependency of its parts upon each other, but to present it rather as a succession of detached and independent doses of knowledge, each to be taken by itself, without regard to what precedes or follows. The consequence is, that by the aid of a tolerable memory, a plausible display may be made at the moment of recitation, when, a few weeks after, it would be difficult for the student to recall any part of what he had so glibly retailed at first. Nor is this absolutely

the worst consequence which, in some instances, proceeds from the same cause. Artifices are often devised by students averse to labor, by which to make a false exhibit of knowledge, and thus secure from the teacher a high estimate for a performance which possesses no merit at all. Concealed papers, interlined books, aid secretly obtained at the moment of recitation by the prompting of a fellow-student, exercises and compositions plagiarized from books, problems and demonstrations obtained from better scholars, and many similar expedients, enable a student often to secure an apparently high grade of scholarship upon the record, when at the same time, his real attainments are very low. These evils, which seem in both cases to be consequences which the system directly encourages, may, in the opinion of the undersigned, be both of them removed by a slight alteration of the mode of determining grade in scholarship. Let this depend to a degree almost exclusive of any other test, upon the periodical and final examinations, and very little, if at all, upon the record of daily recitation. It is important that such a record should still be kept, that uniformity of attention to study may be secured, and that the negligent and grossly deficient may be admonished, or required to withdraw; but in the valuation of substantial scholarship, let thorough examination be the principal as it is the only sure test of merit. If, also, to this be added the suffrages of the students themselves, in regard to the comparative rank of their classmates in literary and scientific attainments, as at Yale College,

and as suggested by Sir William Hamilton, in his ideal of "Oxford as it might be," we should offer to youth one of the highest inducements that could be offered to lead them to covet a reputation with their fellow-students, who know them thoroughly, for genuine scholarship, instead of striving, as now, to secure on the books of the Faculty a record of merit, founded on a basis, at the least illusive, if not fraudulent.

The habit of looking to a distant, and not to an immediate responsibility, will secure more earnest study, and a more sincere desire and determination to understand principles, rather than commit to the memory, facts. It will, moreover, be attended with the knowledge and conviction that the responsibility is a real one, which (if the examinations are properly conducted) no art can evade, and for which there must be a substantial and real preparation.

In order effectually to secure these ends, it may be deemed desirable to give to the examinations a greater duration than at present, and for this purpose to throw all the three term examinations together at the end of the year; which will provide for an annual examination of three weeks—a duration which might, perhaps, be profitably extended to a month. And in addition to this, a biennial examination might be held, as at Yale College, and a final one at the end of the four years, at which the classes should be examined upon all the studies they had pursued from the beginning up to that time. This would make the distant responsibility a reality so serious as to necessitate the attainment of

genuine, instead of seeming scholarship, and would remove the temptations which now exist, to fall into habits of systematic evasion of study.

There remains one other particular, in regard to which a change appears to be desirable. According to the rules at present existing in this University, if a student fails in the performance of any particular exercise, on account of sickness, or other sufficient excuse, he is permitted to prepare and perform this exercise by himself separately, and is entitled to receive credit for the performance, precisely as if it had been accomplished in its due season. Should the principle of estimating scholarship according to the recorded marks of the term exercises be abandoned, then this regulation, as dependent on it, may as well be abandoned likewise. But if otherwise, it is still to be desired that this, as the undersigned believe, worse than useless rule, should be dispensed with by itself. In the first place, the student ought to be habituated in college, to contemplate the stern truth that men's misfortunes will never be accepted in life, as a reason why their competitors should pause and wait for them, or should offer them a second trial, in the race for the world's distinctions. By sickness, or other misfortune, the student loses the benefit of a performance which might have counted in his favor. Be it so—let him accept the loss like a man. Another day it may befall his rival. And it is well to learn, by small mishaps like these, to bear those greater ills which may lie before us in the world's ceaseless struggle, where the race too often *is* to the swift, and the bat-

tle to the strong. More than this, it is well to cultivate that energetic spirit which scorns to droop at every trivial pain, or to relax effort at every insignificant discouragement; but which presses steadily onward to its purpose, with a perseverance which never flags while progress is a possibility.

With these suggestions, the undersigned conclude what they have to say in regard to the important subject now pending before the Faculty and the Board of Trustees. At the time of their appointment, they had not contemplated any further action than a simple compliance with the request contained in the communication of the Board, accompanied, perhaps, by a mere programme of such a scheme as they have endeavored to describe in this Report, for comparison with that which had been specifically called for. Any very radical change in a system of instruction so generally approved as that which has long existed here, they had not regarded as a possibility. A growing conviction, however, that the cause of sound education in Alabama is more seriously in danger than they had supposed, has constrained them, under the pressure of a deep sense of duty, to present in full the reasons which lead them to deprecate the introduction here of an educational system which a majority of our wisest men regard with distrust, and which has never been more than doubtfully successful in any college which has tried it in the United States.

F. A. P. BARNARD,
JNO. W. PRATT.

University of Alabama, Sept. 18, 1854.

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LETTERS

ON

COLLEGE GOVERNMENT,

AND THE EVILS INSEPARABLE FROM

The American College System

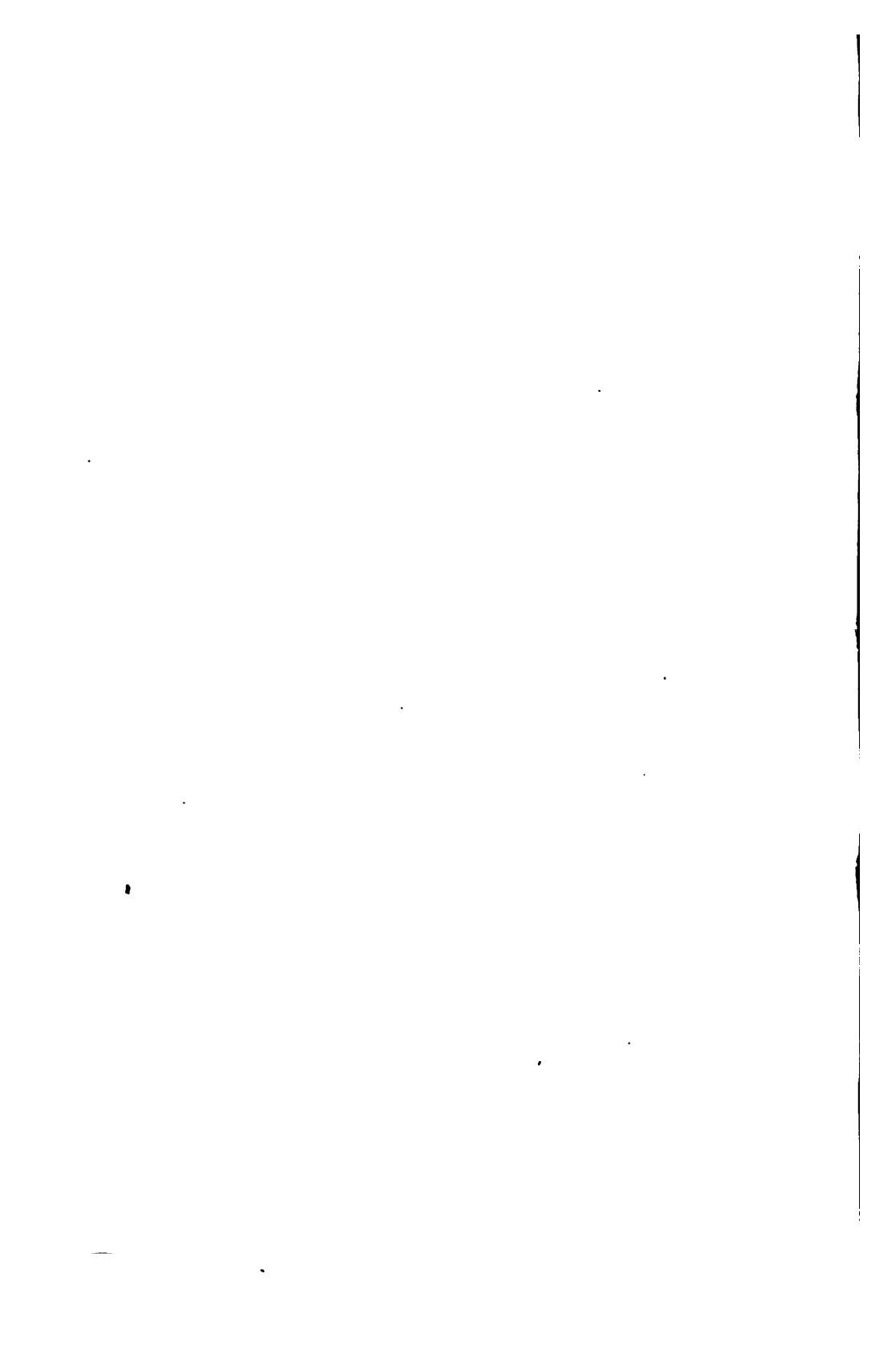
IN ITS PRESENT FORM:

ORIGINALLY ADDRESSED TO HON. A. B. MEEK, ONE OF THE EDITORS OF
THE MOBILE REGISTER.

An American Doctor
FREDERICK A. P. BARNARD, M. A.,

LATE PROFESSOR OF CHEMISTRY AND NATURAL HISTORY
IN THE UNIVERSITY OF ALABAMA.

NEW YORK:
D. APPLETON & CO., 346 AND 348 BROADWAY.
1855.



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INTRODUCTORY.

THE letters embraced in the following pages are republished, in compliance with numerous solicitations from sources entitled to respect. It may serve to explain the somewhat desultory manner in which the topics which they touch are treated, to say that they were originally designed for the columns of a daily newspaper, and that they were expected to enjoy only the ephemeral existence which such a channel of publication could secure. In reproducing them here, it might, no doubt, have been possible to subject them to a process of reconstruction, by which whatever they may contain of general interest might have been more happily presented ; while superfluities might, at the same time, have been retrenched, repetitions avoided, and all that is of merely local application, suppressed entirely. But this, by the pressure of more important occupations, has been rendered impracticable ; and they are therefore reprinted with but very slight alterations of their original form, in the belief that their imperfections, though they may do little credit to the writer, will not tend to disparage the cause which he advocates.

It is obvious that, if there are evils really inherent in the existing system of college organization, the correction of these evils can hardly be looked for until the public demand it. So long as the people are content to take things as they are, so long as patronage is bestowed without misgiving upon institutions embracing, as do most of our colleges at present, the features which it is the object of these letters to exhibit as objectionable, just so long, of course, will there exist no urgent motive to induce those who control such institutions to modify them in any manner which may involve expense. But if the public mind can be awakened to the magnitude of the evils inseparable from the existing college system, though it be so far only as to demand that new colleges shall be constructed upon a wiser plan, and if the evidence of the change of public sentiment shall

appear in the greater favor shown to such, then it is to be reasonably expected that others, out of the mere instinct of self-preservation, will ultimately conform themselves to the popular preference. The appeal, therefore, must for the present be to the people. In making such an appeal in regard to an interest so vast, a single individual may well feel his insignificance. But there are in the community great numbers of intelligent men who well know the evils attendant on the present college system; men who, having been educated in colleges, have seen and felt them, but have perhaps hardly considered the question how far they are capable of removal; and from among such men, if their attention can be drawn to the subject, the isolated advocate of reform may reasonably hope that many will become his hearty coöoperators in the endeavor to impress the public mind. Were it not for the existence of such a class, and for the fact that they are far more influential than any other in proportion to their numbers, the writer of these pages would be disposed to regard the idea of a possible reform of the prevailing college system as chimerical in the highest degree. Nor even when they shall become fully aroused to the importance of the change, if that shall ever be, and shall lend their united efforts to bring it to pass, is it to be expected that the object can be very quickly accomplished. So large are the pecuniary interests involved, that the disposition to change may not always be accompanied by the immediate power; and an evil system may, in many cases, be perpetuated for years, for no reason but the mere inability to abandon it. Still, though the benefits of the desired reform should be reserved for the next, or even for a distant, generation, its advocates should strive none the less earnestly to demonstrate its necessity; since it is only the faithfulness of their present efforts which renders even that distant good a possibility.

It may be observed of these letters, that, though accident may be said to have determined the time of their appearance, and though they were written without any distinctly premeditated plan, yet in substance they embrace the convictions of some years of experience and reflection; and the writer avails himself of this opportunity to acknowledge that his attention was first drawn strongly to the subject by the valuable little work of Dr. Wayland, to which he has taken occasion repeatedly to refer.

University of Mississippi, Dec. 16, 1854.

LETTERS ON COLLEGE GOVERNMENT.

LETTER I.

**STRICTURES OF THE MOBILE REGISTER, ON CERTAIN REGULATIONS AND
USAGES EXISTING IN THE UNIVERSITY OF ALABAMA, CONSIDERED.—
EXAMINATION OF THE LAW KNOWN AS "THE EXCULPATION LAW."**

To the Editor of the Mobile Register,—

SIR:—In the Camden Republic of June 24th, I find some remarks credited to the Register, on a few of the features of college government recognized in the University of Alabama. Your strictures, which accord very well with observations I have often heard from intelligent gentlemen in private conversation, indicate that there is a defect or a difficulty somewhere in the American college system, to which it is desirable that the attention of the whole community should be understandingly drawn. I say a defect in the system, because nearly all the colleges in the United States are founded upon the same system, and the features to which exception has been taken, are features which have been adopted in each, without change, from those which are older. The visitation of the rooms of students, by members of the Faculty, which is spoken

of in your article as “the plan pursued by *the Faculty of our University*,” is practiced in every college in the country, in which students reside in the college buildings—that is to say, in every one in which it is practicable. If it is a bad plan, the extent of its prevalence does not, I freely admit, make it any better; but the fact that it is so prevalent, may not be known to all the readers of the Register; and for this reason an inference to our especial prejudice (which I am sure you did not design) may be drawn from your remarks.

Again, “the plan *adopted at our University*, of putting the student upon his *voir dire*,” is not peculiar to us, as might be inferred by a cursory reader. It is really an “adopted” plan, and the words of the law prescribing it are a literal transcript from the printed laws of the College of South Carolina. This again makes the plan no better, if it be true that it is intrinsically bad. But it suggests the possibility that a student, however distasteful he may find the system of discipline practiced here, cannot reasonably expect to mend his position in this respect by resorting elsewhere.

All American colleges hold their students amenable to the authorities for violations of good order and good morals. All have a government of written law, and a brief and simple penal code. Yet no Board of Overseers or Trustees has yet been able, with all the advantages derived from the personal experience of its members as college students or college officers, or from observation of the practical working of different systems for more than a century, to devise a mode of administering that part of

college government which relates to offenses, without embracing in it provisions which have been sometimes made a subject of grave complaint, and sometimes of unsparing censure, directed against the governing body.

In the article upon which I am commenting, for instance, it is urged against the "exculpation law" that "it is contrary to natural justice—contrary to 'the perfection of reason,' the common law—and contrary to any considerate method of moral culture." As my present purpose is not to vindicate exculpation law, or to meddle with it in any manner, I shall join no issue here. Suppose it be all you say of it, I wish to ask you whether or not (and I ask now for information, for I really do not know) it is the public impression that the principle of this law is at the bottom of our *ordinary methods of proceeding* in cases of college discipline? I ask this question, because, admitting the principle to be as exceptionable as you claim, the answer to it will have much to do in determining how far our system of government is odious. If what I see in the public prints (or have seen in former years) may be assumed to furnish me with any fair means of judging, I am justified in thinking that we are popularly supposed to proceed on this plan every day or every week. Now, the fact is that I have been an officer of the University of Alabama more than sixteen years; and during this long period the offensive law has been resorted to only three times. The unfrequency of its actual application may serve to show that it is a measure in its original design intended only for those extreme cases in which the alternative is the annihilation of all government, and the tri-

umph of anarchy. Whenever they have been driven to the adoption of this expedient, the Faculty of the University have never put it into practice without a sense of pain and sorrow, for which their denouncers of the press or among the people never give them credit. They are charged with the preservation of order in college. They have a duty to execute, and they are not the authors of the system they are required to administer. When the question is reduced to this—shall law prevail, or shall misrule be triumphant and all the operations of college come to an end? they must use the only means put into their hands to secure the supremacy of law, whether they like them or not, or whether or not the surrounding public approve. And this happens, perhaps, once in many years; while the comments which so often reach us, through our correspondence, through conversations with gentlemen at or from a distance, or through the press, proceed on the assumption that it is the commonest thing in the world, and that very possibly, the first business of the Faculty every morning after breakfast is, to put some twenty or thirty students on their "*voir dire.*"

I suppose that no government is anything better than a name, which possesses no means of protecting public order by the compulsory discovery of truth, when order has been violated and the witnesses are certainly, or the offenders approximately, known. There are, so far as I know, but two modes of proceeding effectual for this purpose, and these are—1. That which is sanctioned by "the perfection of reason, the Common Law," to compel the testimony of witnesses to the offense; or, 2. The South

Carolina plan, adopted here, to require the innocent to say that they are innocent. The former is the plan of all the older colleges at the North; and, perhaps, of the newer also. The latter is peculiarly the Southern plan, introduced expressly as a concession to the scruples of sensitive young men. Since, however, the one and the other, when successfully enforced, result alike in securing the ends of government in the detection of the offender, the substitute has proved no more palatable than the law which it replaced; and the northern plan and the southern plan are equally under the ban of popular opinion. In the mean time, one or the other of them, from the stern necessity of the case, maintains its place in the written code of every college; and both, when the painful necessity arises, continue to be put into force, in spite of their unpopularity all over the country.

If our friends among the people, or if our friends of the press, would turn their attention to the true point of difficulty, and would aid us with advice how we may escape from our present embarrassment, we would receive their suggestions with gratitude; and whatever we should find in them adapted to remedy the evil, we would earnestly recommend to the consideration of the Board of Trustees. To judge from the manner in which we are often spoken of, it would seem to be thought that we delight in "exculpation" laws, and that we are never more happy than when the college guillotine is in active operation. I am not using the language of hyperbole when I say this; I but repeat almost literally what I have often heard. Is not this unreasonable? Yet our case is not an isolated

one. Similar sanguinary tastes are imputed quite as frequently to other Faculties. Can it be supposed that the members of College Faculties generally—men, be it considered, who have been selected from the community on account of some supposed more than average fitness for their places—can it be supposed that they are as a class so far behind the rest of the community, in their sympathies with the young men for whose benefit they labor, or in their judgments of what will most promote the welfare of their pupils, as to lean from choice towards measures which shock the public sensibilities, and to require a popular censorship to restrain their tyrannical propensities?

As no one has yet suggested to us what new substitute we should adopt, in case we consent to expunge the "exculpation" law from the college code, we are now held up to public odium for an evil which we did not create, and which we know not how to remove. Even you, Mr. Editor, would not have us go backward, and adopt the common-law principle, which compels every witness to his neighbor's offense to testify to the fact or suffer. In this application, even "the perfection of reason" would strike you as an abomination. I do not say that I should entirely agree with you; but I state what you will admit to be a fact. I doubt if such of our citizens as condemn the law of "exculpation," have ever set it beside these older laws which it superseded. For their information, I will give an example of both. The following is extracted verbatim from the laws of Yale College:

"Whenever a student shall be required by one of the Faculty to disclose his knowledge concerning any disorder,

offense, or offender, against a law of the college, and shall refuse to make such disclosure, he may be sent home or dismissed. No student shall be questioned for any testimony he may give in regard to a violation of a law of this college; and in case any student shall so question his fellow-student to ascertain whether he hath testified, or with intent to bring into contempt any student because he hath testified, the student so acting shall be deemed to have committed an offense, and may be proceeded against by the Faculty, according to the aggravation of the offense, even to dismission."

While this was law in all American colleges, as it still is at New Haven, the objection raised to it by students was, that it is dishonorable to testify against a fellow-student. The substitute was devised to obviate this objection; and as it stands in the code of the University of Alabama, it is as follows:

"In ordinary cases, and for mere college misdemeanors, no student shall be called upon to give information against another; but when several persons are known to contain among them the guilty person or persons, that the innocent may not equally suffer with the guilty, they are all liable to be severally called up, and each to be put upon his own exculpation, unless the magnanimity of the guilty shall relieve the Faculty from the necessity of this expedient, by an ingenuous confession of his or their own fault. If any student, when thus permitted to declare his innocence, shall decline to exculpate himself, he shall be considered as taking the guilt of the offense upon himself, and encountering all the consequences. If a student shall

deny that he is guilty, that shall be taken as *prima facie* evidence of his innocence; but if it shall afterwards appear from satisfactory evidence that he was really guilty, he shall be considered unworthy to remain in the University."

The requisition to testify *against* a fellow-student being here abandoned, a scruple arose, of a character entirely new. Hitherto it had been no part of the unwritten code of undergraduate law, that the good should protect, screen, and suffer martyrdom for the bad; the whole college body were not held bound to become accessories after the fact to any enormity; or to obstruct, by united and systematic action, the operations of law for its detection. The popular sentiment in college favored the view that it is well that law shall have its course—it is well that offenders shall be reached and dealt with—it is well that good order and good morals shall be preserved,—but that it is not well that a student shall become an informer upon his fellow-student. I say that this was the popular sentiment, because I know it, having myself been educated in a college where the old law prevailed. What popular sentiment is with us now is evidenced in the fact, that it has the power to force young men of the highest standing for morality and personal rectitude of conduct, into a combination for the defeat of all inquiry, and for the protection of a few disorderly individuals, whose turbulence, both by night and by day, is such as to obstruct all the operations of the University. Whether the young men in their scrupulous regard for what is due to good fellowship, are not beginning to "put too fine a point on

it," I shall not stop here to inquire. It is sufficient for me to say that when matters reach a pass like this, the necessity that *something* should be done is crying, and all the wisdom of University Boards has hitherto been able to discover but the two modes of proceeding I have pointed out, viz.—that which has the sanction of the "perfection of reason," and that which makes every student liable to be called on for his own exculpation.

Lest any erroneous inference should be drawn from the *time* at which this letter is written, let me observe, in conclusion, that, though it is elicited by remarks of yours upon the late troubles in the University, it has no reference whatever to them; and that the "exculpation law" was not applied during those troubles. Students already under suspension, have, it is true, as a condition of restoration, been required to make some disclaimers. Whatever may be said or thought of the expediency of this requisition, of which I say nothing, thus much is at least true, that to refuse to make the disclaimers required, could, at this time, operate no advantage nor secure any protection to any fellow-student, since, when they were exacted, all parties were equally separated from the University already.

Now, Mr. Editor, do not believe, because I have detained you so long over the matter of this law, that I see nothing in what seems to be the necessity of its existence to regret, or nothing in the evils which too usually follow its application to deplore. If you do so, you will do me great injustice. My only object in asking you to publish these remarks, is to draw the attention of thinking men in

the community to the most difficult point connected with the whole subject of college discipline—the question how shall the supremacy of law be maintained in the last emergency, without an admitted power in Faculties to use either the means of investigation employed by civil courts, or those gentler, and (as was once thought certainly) less offensive ones, in consideration of which they have been content to yield the former.

The topic which principally occupies this letter, is but one of several connected with college organization and government, on which I have often wished to address some observations to my fellow-citizens. With your permission, now that my hand is in, I will endeavor to make one or two further, but I hope not quite so formidable, encroachments upon your space hereafter.

University of Alabama, July 1, 1854.

LETTER III.

REASONS WHY "THE EXCULPATION LAW" HAS PROVED A FAILURE.—INQUIRY HOW FAR IT SHOULD BE DEEMED DISHONORABLE FOR ONE STUDENT TO GIVE TESTIMONY IMPLICATING ANOTHER.

In my last letter I promised, at greater leisure, to examine still further some of the particulars in which the government of American colleges is attended with difficulties, so great as to indicate a fault somewhere inherent in the system itself. I proceed to redeem my promise.

It is certain that the greatest of the difficulties here spoken of is that to which my last communication was principally devoted, viz. the means of suppressing disturbances of the peace, or of detecting their authors, when all ordinary appeals have failed, and it has become necessary to invoke the penalties of the law. Upon that subject I have not yet completed all that I have to say.

I assumed that the very idea of government implies the possession of the power to compel, in some manner or other, the disclosure of truth, when that is necessary for the protection of order, and for the maintenance of the supremacy of law. I described the two modes by which it has been attempted, in different colleges, to exercise this power: the first being no other than that used in civil courts, and the second being the mode prescribed in what is commonly called the "exculpation law," as it exists in this University and some other Southern colleges.

I have shown that the second of these modes was originally devised for the purpose of obviating objections which had been made to the first. That it has completely failed in its object, is rendered obvious by the frequency with which we hear it denounced in conversation and in the public prints. For an instance, I need go no further than to your own expression of opinion in the Register, which furnished the occasion of my former communication. But, because I chose to demur to the *grounds* on which you took exception to the law, you must not understand me to regard the same law with entire complacency myself. By no means. I can never believe that any law which meets the disapprobation of the public, is a good law. The efficacy of law is not to be looked for in the pains and penalties it denounces, so much as in the support and approval of all good men. Whatever enactment fails to secure these, fails of the most essential element of moral power. It matters not whether it be intrinsically good or bad; it is enough to make it bad, whatever be its intrinsic excellence, that the community who witness its enforcement regards it as oppressive and wrong. What more is necessary to undermine the efficacy of any law, than to crown with applause those who resist its operations, and to canonize its victims as martyrs in a glorious cause!

It may be answered that no law *can* be intrinsically good, against which the voice of the people among whom it exists is so emphatically and so unanimously pronounced. This argument is certainly plausible, but by no means conclusive. The law of Congress providing for the

arrest and delivery of fugitive slaves is certainly a good law; yet throughout the length and breadth of the States for which it is designed, there is no division of opinion at all as to its wrongfulness. Those even who give it their support—politicians, editors, ministers of the Gospel—even judges from the bench—do so avowedly for no other reason but because it *is* a law, and not because they approve of its provisions. It is plain, then, that public sentiment, however decided, and however unanimous, is not always of necessity right; and that the old maxim, *VOX POPULI VOX DEI*, is to be taken with a large latitude for error.

I assume, then, that the “exculpation law” is not necessarily *malum in se*, because the people do not like it; but I admit that the tribunal of public opinion has certainly made it *malum prohibitum*, to the extent that no college Faculty can apply it without being immediately arraigned at that bar, as if they were the real offenders themselves. It fails, therefore, in what I have described to be the most essential element of moral power; it fails because the public, as well as every community of undergraduate students, are banded against it; and because applause instead of censure awaits every individual who sets it at defiance.

Has any thing been gained, then, by the attempt to substitute in colleges a method of legal investigation at variance with the principles of the honest old common law? I think not; yet while making this admission, I can see nothing morally wrong in the substitute. It is otherwise when we look at the subject in the light of expediency, or as a question of policy. I cannot but believe that

a great mistake was made by the originators of this innovation upon the time-honored principles and practices of penal jurisprudence. It may be very noble, and honorable, and magnanimous, and all that, for young men or old men to refuse to give testimony before any tribunal, the effect of which would be to expose their companions or friends to unpleasant consequences ; but it appears to me that the court which claims the right to such testimony is not called upon to make any such admission. And if it does make such an admission, in regard to the open, honest and straightforward form of explicit statement, then I cannot see how it has any right to claim that a refusal to permit the truth to be extracted from the witnesses by indirection, is any the less noble or honorable or magnanimous. Both the old law and the substitute aim to fasten the offense upon the offender by the force of testimony. In the one case, the responsibility of this testimony is confined to a few ; in the other it is divided among a greater number. But that which is mean, or contemptible, or wrong in any individual, is not the less so because a whole community share in the taint. A stain upon the honor is not a thing to be diluted by involving in its foulness the honor of many. And whenever any governing authority admits for a moment that it is mean, or that it is wrong, for any individual of the subject body to give such testimony as may be necessary to secure the ends of good government, it becomes self-divested of the most efficacious and almost the only means of ensuring the due observance of its laws.

The principle that no student may, *in any case what*

ever, without dishonor, give testimony to convict a fellow-student of a violation of college law, is at once mischievous and wrong; and one which the trustees and Faculties of colleges should be the very last to admit. No matter to what extent public sentiment may lend its sanction to this principle, the governors of colleges should set their faces resolutely against such a sentiment, and should endeavor, by all the means in their power, to correct it. Least of all should they allow themselves to be borne along with it, or commit an act so suicidal as to stamp with their own openly expressed approbation, a principle which denies to them a right absolutely vital to the administration of any government.

It is my candid opinion that our colleges have themselves chiefly to thank, for the extent to which their powers of government are paralyzed by the influence of surrounding public opinion. Till they, in so many words, relinquished the right to compel the witnesses to any flagrant offense to declare their knowledge, public sentiment did not so universally, so unanimously, or so sweepingly stigmatize the act of giving such testimony. Why should it? It is not dishonorable to testify in a civil court. Nay, even when the civil power has occasionally interfered to take the administration of justice out of the hands of college Faculties, the very same young men who assumed to be unable to state the truth to their academic superiors without dishonor, have shown no hesitancy to give evidence before a jury—yet no one has thought the worse of them. It is no reply to say that the civil court may commit a witness for contumacy; and that

therefore he has no choice but to testify. We are talking now about a question of right and wrong—honor and dishonor ; and if, instead of committing to prison, our courts, like those of the Inquisition, could apply the rack, even torture itself could not justify the disclosures demanded, if it is really wrong or dishonorable to make them.

But as it is usually true that there cannot be any widely spread or deeply rooted popular conviction, without some original basis of reason, to whatever extremes the conviction may have been carried which the basis will not justify, it is worth while to inquire out of what plausible, or even in their first application just, considerations, has grown the doctrine that no student may inculpate another student by his testimony, without dishonor. In the first place, then, students associated together in the same class, or in the same college, occupy to each other not only the relation of subjects to a common government, but that, to a certain extent, of members of the same family. And as in families mutual confidence is an unavoidable necessity, so the obligation to guard it inviolable is one which exists antecedently to and independently of promises. It is not voluntarily assumed, and it cannot be repudiated at the option of the individual. But, secondly, it often happens, if not usually, that none are witnesses of those violations of college laws which become the subject of subsequent inquiry, who are not themselves to a greater or less degree implicated in them ; and hence, that the act of giving such testimony as may subject another to censure, betrays a seeming willingness to purchase immunity to one's self by treachery to a friend. Viewed in this

light, the act of testifying is especially odious; and to this case I propose to devote no attention.

But in regard to the *implied bond of confidence* between members of the student-body, common sense suggests that it is not and cannot be of the uncompromising nature of that which accompanies the family tie; while we cannot but call to mind that the civil power does not recognize even that as inviolable, when the public good requires that it should be set aside. The students of a college are by no means so compacted together that the private acts of each one are of necessity exposed to his companions. There does not, in other words, exist the forced confidence of the family; and the main argument in support of the inviolability of that confidence in this case falls to the ground. Yet, inasmuch as it is undesirable that, in a community of generous and impulsive young men, there should creep in any thing like a feeling of mutual suspicion, I would have it continue to be thought, as it is I believe pretty universally thought, among Faculty and students equally, that information privately volunteered by one student injurious to another, is entirely dishonorable, and ought to be discountenanced by the authorities, as well as frowned on by the students.

In many cases of disorder in college, not only are the great majority of the community unacquainted with the offenders—showing that no necessary confidence exists which is in the nature of things unavoidable—but, when it is otherwise, and when those who interrupt the good order of college force themselves upon the notice of their peaceably disposed companions, it not seldom happens that

strong displeasure is excited on the part of those whom they thus make the witnesses of their lawlessness. It is nothing short of an absurdity to say that persons who are thus not necessarily cognizant of infractions of order, or who when made acquainted with them, are made so against their will, shall be held bound to identify themselves with the offenders, and, no matter what may be the enormity of the offenses (and it is often great), shall actually themselves suffer the penalties due to the misdeed, rather than by their testimony permit the authorities to suppress the disturbances, and protect them in the enjoyment of their rights, and in the peaceful prosecution of their studies.

After what I have said, I suppose I need hardly tell you that, had I a system of law to prepare for a college about to go into operation, the "exculpation law" should form no part of my code. Neither would I commit the folly of requiring a Faculty to protect order and administer justice, without empowering that body to investigate most thoroughly every case in which neglect of discipline might endanger the preservation of the ends for which government is instituted. And in order that nothing might be wanting to their power in this respect, I would make it obligatory on every student to give evidence—not to individual officers in private—by no means—but to the entire governing body, when sitting as a court of inquiry, in regard to any breach of law which may have occurred in his presence, or to his knowledge personally obtained, no matter by whom committed. Should the student so interrogated refuse to reply, he could but be dismissed;

and that is the penalty which college Faculties are now compelled to inflict on innocent men, when they refuse to declare, under the "exculpation law," that they are innocent.

I am by no means sure that the doctrine I here avow will be a popular doctrine. I incline to think rather that it will be the very contrary. Since colleges themselves have done so much, in my honest belief, to aid in vitiating the public sentiment on this subject, I have little hope that the course which appears to me to be recommended by the plainest common sense, will meet for the moment the approbation of my fellow-citizens. I ask for no such immediate approval. I ask only that reflecting men shall turn over the subject in their minds, and come to no decision at all until after mature consideration. It is evident that difficulties environ it on every side. Experiment has satisfied me that there is no escape by endeavoring to go round about. In this case, as in most in which there is any thing serious to be hazarded, I believe that the safest course is to take the bull by the horns.

In concluding this letter, I would merely add that the modes of investigation of which I have been speaking, both that of the old colleges and its substitute which exists here, much as they are denounced and rarely as they are applied, have after all been productive of an amount of good seldom considered and difficult to be estimated, constituting as they do the most substantial guaranty for the maintenance of order and the supremacy of law. This point I shall further illustrate hereafter.

University of Alabama, July 21, 1854.

LETTER III.

OBJECTION TO THE MORAL TENDENCIES OF THE "EXCULPATION LAW"
CONSIDERED.—SUBSTANTIAL BENEFITS DERIVED FROM THE EXISTENCE
OF LAWS TO COMPEL THE DISCLOSURE OF TRUTH.

ONE of the objections advanced by the Register against the particular law of this and other Southern colleges, which is known as the "exculpation law," I have thus far omitted to examine. I allude to the assertion that the mode of proceeding sanctioned by that law is "contrary to any considerate method of moral culture." Having frankly expressed my own very decided dissatisfaction with the law in question, on grounds of expediency and policy, I must still feel it to be my duty to defend it on those of morality.

I have shown that this law was adopted as a substitute for another, which other was supposed to press too harshly upon the delicate sense of honor of young men in Southern colleges. Hitherto the main, if not the sole, objection which has been alleged against it by the young men themselves and their friends, has been that it still oppressed them in the same point in which the former had been intolerable; that, in short, it was but a mode of obliging them to do indirectly, what the previously existing law required that they should do directly, viz. discover to the authorities the authors of any given violation of law. Whether or not the sentiment upon which this objection

is founded is worthy of the respect it has received, whether it is the offspring of a true or a false notion of honor, is a matter of no present importance; its existence is undeniable, and it has down to the present time constituted the entire basis of all the opposition which this unfortunate law has had to encounter. The objection of the Register is new; let us see if it is any more substantial. To me it appears to involve suppositions entirely incompatible with each other.

How it can rationally be maintained, for instance, that an individual whose sense of honor is so nice that he will not tell the truth, when called upon, lest he should implicate a companion, may yet not hesitate to tell a lie lest he should implicate himself, I am at a loss to comprehend. But should this phenomenon occur in an exceptional instance, how the whole body of the companions of such a recreant, should still feel bound, by the force of the sentiment above spoken of, to maintain their silence nevertheless, and even to give themselves up to martyrdom, in order to protect the mean-spirited delinquent in the enjoyment of the benefits of his falsehood, is still less conceivable. Can any thing be more certain than that public opinion would blast such a wretch, and drive him out from a community of honorable men? For, be it observed, the case in which an offense is known only to its perpetrator, is a case almost or quite without example in college; and I cannot conceive that there could be any such case possible, in which a Faculty would ever think of applying the "exculpation law" as a means of investigation. The language of the law itself, as I have cited it in a former communication,

forbids such a supposition; for it is there explicitly stated to be designed to discover the offender only when he is known to be one of several individuals distinctly designated. The offender is always, therefore, more or less generally known to the student-body; and in case of an act of moral turpitude like that supposed above, he could not fail to become at once known to the whole. No young man, after such an act, would be tolerated for a moment in college; he would be ostracized without a dissenting voice. Those who have had the slightest acquaintance with such communities know this; and I cannot but feel surprised that the editor of the Register should so soon have forgotten what his own observation as a student unquestionably taught him. But the "exculpation law" has not been assumed to exert any other demoralizing influence except that of holding out an encouragement to falsehood. What that encouragement can amount to, in the face of counteracting principles so efficient as those which I have just pointed out, I leave my readers to judge.

And here I might dismiss the subject were it not that the present objection, like those which I have heretofore disposed of, happens to lie with no less force against the old law—which I have shown to be the only alternative law—than it does against the present. Take the rule at Yale College, for instance, that the student shall testify to what he knows, let the evidence inculpate whom it may. A refusal to speak draws down the censure of the Faculty upon himself; a free declaration of the truth, crimинates his fellow-student, and involves the witness in popular

odium. In this case, as in the former, at a *prima facie* view, it would appear that falsehood would save the witness from unpleasant consequences on either hand. He may testify, and so disarm the Faculty; but he may testify falsely, and so save his companion. What is to prevent his doing this? Nothing, but his own strength of principle, and that withering power of popular opinion in college, before which the deliberate liar cannot for one moment stand. Thus, whichever be the mode of investigation sanctioned by the laws of any college, the same temptation (if it is a temptation) to falsehood in the witness, equally exists; and the same powerful counter-influences co-exist with it, to neutralize its power to harm.

I asserted in my last communication that the college laws to which so much exception has been taken, have, notwithstanding, been productive, after all, of a great deal of good; and I promised further to illustrate this assertion. You will certainly not understand me to intend that they have effected this good by their frequent application; since I have distinctly admitted that they are seldom put actually in force without being attended by temporary injury to the institution which is compelled to fall back upon them. I maintain that such ought not to be the case; but I admit, as I have said before, that in the present morbid condition of public sentiment on the subject, such is, in point of fact, the unfortunate truth. The good which they do is therefore not to be measured by the amount of transgression which they punish, but by the much more considerable amount which they prevent.

As American colleges are organized to-day, the oppor-

tunities of the Faculty personally to know in what manner the time of the students is occupied, at all those hours in which recitations or lectures are not actually proceeding, are so extremely limited, as to be practically little better than none at all. Our collegiate system is an attempted imitation of that which was instituted at Oxford and Cambridge, by the monkish lecturers of the middle ages, founded mainly upon the principle of the monastery; but the imitation is unfortunately complete only in the least desirable of its features, while it is deficient in most of the safeguards originally designed to secure it against abuses. In those venerable universities of Great Britain just mentioned, every college is a quadrangle, securely walled in, with a janitor always at the door, and with a definite hour for shutting in the entire community by bar and bolt. Within the same architectural pile reside not only the governed, but all the members of the governing body, from the President (master) down to the numerous "fellows," one of whose duties it is to aid the authorities in the preservation of order. The whole college body, moreover, not only reside under one roof, but dine together at one table; so that, in all save the religious aspect, the distinguishing features of the monastic family are kept conspicuously prominent to this day.

It was not a very great undertaking for a body of governors possessed of advantages like those here described, to assume the responsibility of preserving good order among a body of students committed to their guardianship. With us in America the case is very different. Our college dormitories are erected in an isolated group, in the

midst of an open area. No officers, or only here and there a tutor, occupy rooms in these buildings by night; none in some instances even by day. No president or professor meets the students at a common table; nor do commons continue still to exist, in the majority of cases. No janitor marks, or can mark, who leaves the premises during the hours which the law devotes to study; still less, who steals away or returns at those unwarrantable hours of darkness when nearly every one of the offenses most ruinous to good order and most difficult to manage is usually perpetrated. Yet under all these disadvantages, the public demands of the Faculty of every American college that it shall govern to the exclusion of every other species of authority, and shall still govern well. The college is a sanctuary which the civil power may not invade. It is an *imperium in imperio* within whose confines no municipal functionary may venture to set his foot. It is a community shut out with more than Japanese seclusion from the surrounding social world; and subject in its members to none of those restraining influences, by which public opinion bears upon the conduct of the individuals who make up the society to which man is born, and to which the student himself must at length return.

Such a community, so utterly exempt from every other species of control, it is which an American college Faculty are required to govern, and to govern well. Is it reasonable to expect them to do this, without arming them with the power? And is it not nonsense to talk of furnishing them with such arms, while they are denied the right to compel, under the highest penalties of the law,

the disclosure of truth, when the truth is necessary to the protection of order and the vindication of authority? I have asserted, and nobody has denied, that there have been yet discovered but two modes of exercising this compulsion. I have admitted with regret that neither of these modes finds favor with the public at large, whose interests are deeply involved in the success of colleges, and whose support ought always to be unhesitating and prompt on behalf of college authorities. But in spite of this I maintain that these laws have been productive of incalculable good, and that they are so still, at this very day.

They operate as a restraint of so powerful a nature, against pushing disorders to extremes, as to render such an event one of the rarest occurrences in college history. Unfrequently as they are applied, no student is ignorant either that they may be or that they inevitably will be so, whenever the necessity arises. Now, though no doubt it is a glorious fate, and one attended with much applause of friends, to say nothing of an almost inevitable newspaper apotheosis, to perish (academically) in the fires of college martyrdom; it is, nevertheless, not a fate which is spontaneously courted. No species of martyr—not even the Christian—is usually such from absolute preference or choice. And should the unbiassed testimony of young men themselves, who have had the largest experience in this way, be taken, I have no doubt whatever that it would be found to accord in the main with the view expressed by the elder Weller of *matrimony*, viz. that it is a very fine thing no doubt, “but whether it is worth while

to go through so much to gain so little, is perhaps more than can be said for it."

As a general rule, it may be remarked that the student finds college life agreeable. There is a sort of indescribable fascination about the microcosm of which it makes him a member. There is a charm in the ties to which it introduces him, and a fervor unfelt in later years, in the friendships which in the yet unchilled warmth of his youthful feelings it leads him to form. When, in the regular progress of events, the inevitable hour approaches which is to dissolve this dreamy episode of his existence, he feels a pang, deep and real as that of the exile who steps on board the bark which is to bear him from his native land forever. Exceptions may—such undoubtedly do—exist; I speak of the great majority. And I say that a life so charming will not on slight occasion be voluntarily self-terminated!

I take no account here, at all, of the deep and earnest interest which many—possibly most—take in the intellectual pursuits to which their college life is devoted. I say nothing of the firm conviction and just appreciation of the value of the opportunities which they enjoy, for self-formation, and preparation to grapple with the realities of life, by which the minds of all thoughtful young men are impressed in the midst of the priceless advantages here surrounding them. These are benefits which no man of sense will lightly relinquish, however ardent and impulsive the fires of youth may make him. But I say that, when to these weighty considerations are added the peculiar charm of student life, of which I have more particu-

larly spoken above, the inducement to avoid acts which may raise, and to suppress practices which may provoke, issues which, however attended with temporary eclat, must necessarily terminate disastrously to the student at last, is scarcely deficient in a single element of completeness. It is thus that the laws of which I have been speaking, exert a happy influence in spite of their unpopularity; while, were no such laws in existence, American colleges, as at present organized, would possess no guaranty that their tranquillity would remain undisturbed for a single day.

University of Alabama, July 26, 1854.

LETTER IV.

DIFFICULTY OF THE POSITION OF COLLEGE OFFICERS AS GOVERNORS.—
PERSONAL QUALITIES ESSENTIAL TO THEIR SUCCESS.—PRINCIPLES OF
ACTION BY WHICH THEY SHOULD BE GUIDED.

To what I have already said as to the necessity for the existence of a substantial guaranty for the preservation of good order in institutions organized as are, for the most part, the colleges of this country at present, I have nothing further to add. But having more than once alluded to the evidence of an evil or defect inherent in the system itself—evidence which cannot be evaded or impugned—it might be expected that I should point out this defect and endeavor to suggest a remedy. That is a part of my purpose, but I am not quite yet prepared to come to the point. I have discussed but a portion of the evidence by which the existence of the evil is manifested. There remains still more behind.

Before giving further thought to that matter, however, permit me to call the attention of the reflecting public to the difficulty and delicacy of the position in which all college officers, under the existing system, are placed; and the great need which they have, when they faithfully discharge their duty, of being sustained by the approbation of the wise and thinking; since it is vain for them to look, when it is most to be desired, for that of the masses, who are too apt to judge without consideration, and are predis-

posed to condemn (as I have already shown) the only basis on which a stable college government can be erected. While matters proceed smoothly and the penal law slumbers, it is possible that those who happen to be at the head of affairs may receive higher commendation than they really deserve; and that without possessing uncommon qualities as governors of youth, they may yet be reputed to possess them. But let disorders arise, and let it become necessary to resort to measures of extremity to suppress them, and it will presently be manifest that no prudence, no forbearance, no wisdom, can save the best men from the much evil-speaking which the popular dislike of the system they administer is sure to draw down upon them.

While this faulty system continues, then, will it ever be possible so to conduct the government of any college, as to avoid altogether the recurrence of scenes like that through which the University of Alabama has recently passed, and which never fail to give a shock to the prosperity of the institution in which they occur, from which it requires a sensible time to recover? So long as human nature remains what it is, the answer to this question must, I fear, be negative. For in order that the possibility may exist, it is necessary that a government should be so wise and so prudent and so benignant, as by its moral power alone to accomplish all the ends which laws are enacted to secure. And such a government, by the terms of our supposition, must not be merely temporary—as may well happen under now and then a preëminently gifted head—but permanent, under a succession of rulers. This

is more than can be reasonably expected. Yet the fact that the strong arm of the law is not oftener invoked is evidence that college officers, as a class, do in fact possess a large share of those qualities which render law unnecessary, and to the presumed possession of which they owe in a considerable measure, their selection for the posts which they fill. Persons unaccustomed to reflect upon this subject, may imagine that it is a very simple thing to discharge at once faithfully and acceptably the delicate responsibilities resting upon a member of the government of a college. There is no difficulty in showing how great is the mistake committed by such.

It is not enough that a man be a good man in order that he may succeed as a governor of youth. The very best of men may make the worst possible of governors. Good men act from convictions of duty; and when once their course is chosen, the *mens conscientia recti* not only sustains them in it, but forces them to cling to it, whatever may be the consequences. How important, then, that a man should be wise as well as good—that his judgment should be as sound as his purposes are upright and his principles pure! But wisdom and goodness combined are still insufficient to guaranty the success of a college governor. Rectitude of intention and soundness of judgment may lead to a correct decision as to what the exigencies of a particular case demand; but absolutely the same measure in the hands of two different men may be put into force with results very unequally successful. In college as in family government it is manner no less than substance which secures subordination, and determines com-

pliance with the requirements of authority. This consideration is of the very highest importance. I propose to inquire, therefore, more positively, what are the qualities which a member of the government of a college ought to possess ?

Before descending to particulars, I may say in general terms, that these qualities ought to be such as, in their combination, to impress all whom his authority reaches with the full conviction that toward them personally he has but one feeling, which is a feeling of kindness; and that in whatever he does affecting them he has but one motive, which is to do them good. It unfortunately too often happens that an impression the very opposite of this springs up and becomes permanently established among a body of students. I have known this to occur in reference to men who certainly lacked none of the qualities which might have enabled them to command a more desirable reputation; but who failed to appreciate the great importance of establishing their rule on the basis of the affections. I am aware that it is hardly with reason to be supposed that any college officer can entertain toward the students whom he instructs any feelings but those of the utmost kindness and good will. The question is not, however, a question of fact on the one side, so much as one of conviction on the other; it is not whether the officer is, but whether he is believed to be, the student's friend. A conviction of this kind once established in his favor throughout the little community to which he belongs, arms such a man with a power to control, which all the terrors of the law could not otherwise give him.

But it may be asked, How can one who from the necessities of his situation must sometimes admonish, sometimes censure, sometimes perhaps even subject to punishment, some of those who are placed under his guardianship, how can he under such circumstances secure that universal and eminently desirable confidence, which I have represented to be so important an element of his success ? In reply, I must refer to that distinction which I have made above, in regard to *manner* in carrying out measures of government. College officers may censure and punish without destroying the confidence of those who incur their displeasure in the sincerity of their desire to promote in the highest degree the welfare of all subject to their government, or without shaking the belief of the culprit himself that they entertain toward him personally no feelings but those of friendship and kindness, even while they censure. An assertion of this kind may be best established by illustration. The venerable Dr. Day, of New Haven, still lives, beloved of hundreds whose youthful indiscretions he censured, whose youthful follies he rebuked, and whose youthful passions he restrained and controlled. For half a century he was an officer of the largest college in the United States, and for thirty years of that period he occupied the presidency. During his connection with the college more than four thousand students were graduated, and there were not less than two thousand more who did not complete the collegiate course. Out of all the great number who thus came in contact with this admirable man and faultless college officer, I never heard of one who did not always regard him with feelings of confidence and

affection; nor even now do I meet an alumnus of that institution, however long graduated, whose heart does not turn back, like my own, with a glow of grateful remembrance to the guide and friend of his early years. The thing, therefore, is practicable. What, then, are the personal qualities and what are the principles of action which may enable any officer to realize it in his own case?

To speak of the second point first. Confidence is a feeling which cannot exist all upon one side, any more than love; nor can a college officer command the confidence of students, without reposing, or at least seeming to repose, a correspondent confidence in them. A principle of action, therefore, from which no wise college officer will depart, is invariably to treat the student as if he believed him to intend rightly. In nine cases out of ten, he will be able to do this from conviction; for, manifestly, as a general rule, the student must and will intend rightly; and if in the tenth case circumstances arise to create a doubt of this, he will at once frankly state these circumstances, and afford the opportunity for an explanation. He will, in short, upon this point have no concealments, nor allow his manner to betray any thing dubious. By adopting this as a principle he will, in ninety-nine cases out of a hundred, be met in a spirit of equal frankness, and will remove the strongest of the temptations by which youth are led to engage in violations of the rules of order. To attempt deliberately to deceive him, or to impose upon his confidence, will be regarded as an act partaking of the nature of treachery—the most odious

of all species of moral delinquency in the eyes of generous young men.

It will be another principle of action which a wise governor of youth will observe, to resort to no means of seeking to learn in what manner the hours of young men are employed, during which his personal observation cannot reach them, except such as are fair, above-board, and distinctly avowed. This principle would be but a necessary consequence of the former, provided that were adopted in full sincerity of purpose, and not merely in outward show. But there is an element of suspicion innate in some natures, which will not let them fully confide in those around them, and least of all, perhaps, in those who are subject to their authority. Such persons, though from convictions of policy they may endeavor to wear an unsuspecting front, find it sometimes impossible to resist the temptation to listen to information coming to them through devious channels, or occasionally even from putting in train devices of vigilance which differ little in principle from deliberate and systematic espionage. It is to be doubted whether any thing so learned is ever productive of any substantial benefit to either party; but it is quite certain that if the means employed become known or even suspected, the moral power of the governor who uses them is broken forever. Between equals, nothing is more true than that none confide in those who refuse to render confidence in turn; between subordinate and superior, this is, if possible, still more emphatically the case. It would be a curious, and at the same time an instructive inquiry, were it practicable, to ascertain how many of the difficulties, great

- and small, which have arisen to mar the peace of colleges, have sprung from the irritation which a sensitive disposition never fails to experience at the impression conceived, whether justly or unjustly, by its possessor, that his footsteps have been dogged, his private acts scrutinized, and his careless and unguarded expressions noted down to be used to his disadvantage. Conceived, I say, whether justly or unjustly; but in the shape which the impression too often takes, and which, not to mince matters, I purposely clothe in the language which the exasperated student himself is wont to employ, there can be no question that it is always unjust. Yet this circumstance renders it none the less prolific of evil. Upon him who entertains it, it exercises all the power of an odious reality to incense and inflame; and even when full conviction does not attend it, it is so far from being the less irritating, that the angry youth is often only the more angry at the suggestion of a possible doubt. It is the part of wisdom, therefore, to avoid any thing which can furnish a basis, however shadowy, to impressions like these. Nor do I believe that college officers often err in this way. I believe that, with most, there is a frankness of real confidence manifested toward the students whom they meet, which engenders an equally unreserved reciprocation of the same feeling; and that the instances are rare indeed, in which the foundation of this desirable state of things is broken up by such measures of vigilance on the part of superiors, as are calculated to destroy that mutual kindness and good will, which are the firmest security for the stability of any government.

University of Alabama, July 31, 1854.

LETTER V.

THE AMERICAN COLLEGE SYSTEM MAINLY DEPENDENT FOR ITS SUCCESSFUL OPERATION UPON THE PERSONAL QUALITIES OF DISPOSITION AND TEMPERAMENT OF THE MEN WHO CONDUCT IT.—INSECURITY ARISING FROM THIS CAUSE.—ENUMERATION OF THE MOST ESSENTIAL OF THE MORAL QUALITIES WHICH THE COLLEGE OFFICER SHOULD POSSESS.

I HAVE spoken of certain principles of action, the observance of which on the part of those who are charged with the government of young men, I consider to be essential to the permanent success of their rule. I am about to speak of certain positive qualities of disposition and temperament, which, in their very highest manifestations, are perhaps the gift of few, but of which the possession, in a degree greater than belongs to the generality of mankind, is apparently no less essential to the certain attainment of the ends of good government. Nor in doing this am I deviating from the main purpose I have in view in this series of articles, which is to demonstrate the existence of an imperfection in our college system as at present organized, in order that I may proceed to suggest what seems to me a simple and easy remedy.

I do not wish to anticipate, nor to take up things out of their natural order; yet since I have distinctly announced my ultimate design, it may not be amiss to say here, for the sake of preventing misconceptions, that what I have to propose is no great and sweeping change, no

suspicious or startling innovation. Neither the evil nor its remedy have any necessary connection whatever with the system of *instruction* now generally practiced in American colleges. The removal of that evil involves no derangement of that system, nor any injury to a single one of its important features. But of this, those who have patience to follow me to the end, will be able to judge in due time.

Meanwhile, if I show it to be a fact, that the successful operation of the existing system of government depends almost wholly upon the character of the men who administer it; and further, that the peculiar endowments which especially fit men for this difficult task, are in their fullest development rare, I shall have established *a priori*, what experience corroborates, that such a system is always insecure; and that, if this element of hazard admits of removal, the remedy ought to be applied.

The first trait of character which I regard as essential to the success of a college officer under our present system of government, is one in which few are found to fail; but which rather from its occasional predominance over the milder traits, gives sometimes something like a tone of harshness to the manner, which it were better to veil; and that is *firmness*. No government can succeed which fails to command respect, and no respect can be felt for a vacillating, timorous, or irresolute superior. The hand must be at once strong and steady which holds the rein over the giddy impulses of heedless or undisciplined youth; nor will any be found more ready to admit this necessity than those, or at least the majority of them (for most

young men are ingenuous) who themselves need the restraint. But upon this point it is unnecessary to multiply words, since the absence of the quality under consideration is rarely one of the faults of an American college officer.

It may be occasionally otherwise in regard to the quality of which I am next to speak, and of which the importance is always most felt in connection with the last. I mean a *mildness of manner*, which divests the firmest government of every appearance of sternness, and clothes the severest decrees of justice with the exterior of kindness. The popular appreciation of the value of such a union of qualities is manifested in the frequent application of the maxim, which, with aphoristic brevity, associates them, as the "*suaviter in modo, fortiter in re.*" Napoleon observed of the French, that they needed for their control "a hand of iron in a glove of velvet." One of his subjects, who probably knew by experience the feeling of the hand, remarked, that the great monarch never failed of the iron grasp, but often forgot to put on the glove. The observation of the French emperor is not inapplicable to the impulsive youth of our American colleges; and while I yield to no one in my conviction of the indispensable necessity of firmness and decision in college government, I sincerely believe that an exterior of unvarying mildness on the part of those who administer such a government, is a means of preventing evil, more efficacious than all the penalties of the law put together. If youthful passions, prompt to effervesce, are easily excited, so are they quite as easily soothed; and the fable of the sun and the wind,

though it symbolizes a truth as universal as human nature, is nowhere more strikingly illustrative than within the walls of a college.

Much, also, of the success of college government depends upon the exercise of a *wise discretion* by the officer, in regard to the use he may make of his own powers. Because he may punish, it does not follow that he always should punish, whenever occasion arises. It does not even follow that he should always betray his knowledge of the offense, farther than to the offender himself. By privately admonishing the individual of the impropriety of his conduct, and pointing out to him the danger to which he has exposed himself, much more good may often be accomplished, in the way of prevention and reformation, than by all the disgrace attendant on public rebuke and censure. When such a course is possible, it is obviously the wisest, as it is the kindest and most forbearing. But such a mode of proceeding may not always answer the purpose; and on this account it is, that no quality of mind is of higher value in the officer than a clear and discreet judgment. Censures, penalties, punishments of all kinds, are unavoidable necessities, arising out of the imperfection of human nature; but as their main design, in human institutions, is the prevention of offenses, so the less they are resorted to, consistently with the attainment of this end, the better.

It is not an unfrequent occurrence, that a young man in college feels himself aggrieved by something which has occurred between him and his instructor. He may imagine that a fair hearing has not been given him in the reci-

tation room; or he may interpret in an injurious sense, words addressed to him in the hearing of his class; or he may believe that he has not been rated as high, on the record, as his performances merit; or some other cause of dissatisfaction may arise, to induce him to remonstrate or complain. Nor should the instructor turn from such representations contemptuously away. *Patience* should be one of his marked characteristics; and he will probably never find it more thoroughly tried than on occasions of this kind. For if he possess the qualities I have already enumerated, especially the last two named, he will have been steadily laboring against the very errors which he sees thus imputed to him, and he must feel that his intention is certainly wronged, whatever impression his words or acts may have conveyed. But this must not provoke him to listen any the less patiently, or to explain any the less circumstantially, the occurrences out of which the dissatisfaction has grown; nor if he pursues such a course will he usually fail to dispel the momentary chagrin, and re-establish the feeling of confidence and kindness which it had temporarily disturbed.

I need not say how important it is that the college officer, whether in dispensing censure or praise, should be actuated by no feeling of favor on the one hand, or of prejudice on the other. There exists no higher necessity in the civil courts, that justice should be meted out with severe *impartiality*, than that the same principle should preside over all the awards of college authority. No more frequent charge is advanced against the officers of our literary institutions, than that they are partial. The

partiality alleged to exist, is more commonly one of favor than the contrary; but we hear it sometimes asserted, nevertheless, that the prejudices of officers blind them to the merits of certain individuals, or lead them to exercise toward such an undue severity. As a general rule, it may be said that these imputations are unfounded. The disregard with which, often as they are made, they are treated by the public, shows that they are considered to be, as on the slightest estimate of probabilities they must appear, entirely baseless. They point out, nevertheless, a quality which it is absolutely indispensable that the college officer should possess; while they admonish us that it is not the possession alone, but the reputation of possessing (I refer to the reputation within the college itself), which the judicious officer will aim to secure.

It may be observed that the most cautious wisdom will not always preserve to the most judicious college officer, the invariable and unfailing good-will of those whom it is his duty to control. Sudden ebullitions of temper on the part of excitable young men, may prompt them to hasty words or acts, well suited to subvert the equanimity of any one, however by nature imperturbable. Yet the imperturbability of the college officer should be superior to all such provocations. He should tranquilly suffer the moment of excitement to pass by; and allow the offender, under the influence of the self-rebuke usually consequent upon reflection, to make the reparation which the case demands. To allow himself to become excited, is but to widen the breach and render it irreparable; when but a single consequence can possibly follow. He who

has set at defiance the authorities of the college, or treated its representative with gross disrespect, can no longer remain a member of the institution. The necessity, therefore, of *great power of self command* on the part of a college officer is obvious; for though the occasions which may severely try it can never be frequent, yet the want of it, whenever they occur, is a misfortune for which nothing can adequately compensate.

I have but one thing more to add. To a wise college governor, *the word INEXORABLE will be unknown*. The faults of youth are usually faults of impulse rather than of deliberate purpose. They evince not so much settled wickedness as thoughtless folly, or giddy recklessness of disposition. Few so immature in years as are the majority of college youth, are already entirely abandoned; while it is a fact almost without exception, that those among every body of students who have passed the climacteric which separates them from boyhood, have ceased any longer to require the restraining influence of college governments. The culprits, then, who are brought to the bar of college justice, are almost invariably boys, whom vice has not had time utterly to subjugate, and whose consciences are not yet callous to every appeal. From such, when they repent, a considerate governor will be slow to turn unfeelingly away; nor while there remains room for pardon will he hesitate to extend it to them. He will remember, that on his decision perhaps hangs the entire destiny of the offender, for this world if not for another; and no considerations but such as involve the highest interests of the entire community over which he is placed as a guardian, will

prevent his accepting the evidence of sincere repentance as an expiation of the most serious fault.

But were all college officers gifted in the highest degree with the qualities which I have enumerated, I do not know that it would follow that troubles would be impossible. I only know that the non-existence of these endowments, to at least a pretty large extent, leaves open a wide door for their entrance. It is true, therefore, that the existing college system is dependent for its successful operation, in a very eminent degree, upon the kind of men to whom its administration is entrusted; and this fact, if it inheres in the system only in consequence of the existence in the same system of features which are inessential to the great purposes of education, and which admit of easy removal, is an evil the more to be deplored, because it is unnecessary.

University of Alabama, Aug. 5, 1854.

LETTER VI.

OBJECTIONS OF THE "REGISTER" TO THE DAILY VISITATION OF ROOMS, CONSIDERED.—DESIGN OF THIS VISITATION.—REASONS FOR MAINTAINING THE USAGE.—SOCIAL INTERCOURSE BETWEEN OFFICERS AND STUDENTS OUGHT TO BE CULTIVATED.

I AM now prepared to return to the consideration of a college usage to which you have raised serious objections, but which I dismissed, in the commencement of this discussion, with no other remark than that its prevalence is co-extensive with that of the system itself:—I allude to the practice made obligatory on the officers of colleges to visit, from time to time, the rooms of the students, during the hours set apart for study.

You object to visitation mainly upon two grounds: First, that it is an invasion of the natural right of the student to privacy; and, secondly, that its object is to obtain, by sly and stealthy approaches, a knowledge of such unlawful practices as would not probably be reached by fair and honorable means. I do not say that you charge, in so many words, premeditated and systematic meanness on all college officers, but this charge is certainly contained, by implication, in your objections to the practice under consideration.

Now, in what sense, I ask, is any natural right of the student invaded by subjecting him to this liability to visi-

tation? The college receives him as a student, only on the condition that he consents to yield up a material portion of his time to the direction of the authorities. These authorities, in order that there may be no possible mistake as to how far this condition extends, and as to what they claim as their own, have specified, in printed rules, a copy of which is furnished to each individual affected by them, precisely what hours of the twenty-four shall not be private to the student; but may be, if they so require it (and they occasionally do) passed uninterruptedly in their immediate presence. The officer who is to meet a class at a certain hour, for recitation or lecture, may require their attendance upon him, if he pleases, during all the preceding hours of preparation. I have often done this. On special occasions, I have been repeatedly requested to do it by the classes themselves. But in case this right is waived, as it usually is, and study is prosecuted in the student's own apartment, the law recognizes no privacy whatever during the period allotted to study; and it provides for the visitation of the rooms, as a practical standing assertion of the fact that his time is in no sense whatever the property of himself, but that it belongs to the authorities to dispose of, absolutely as they please. Beyond these hours, thus set apart for university purposes, the system of visitation does not extend; and, in modern colleges, never has extended. Out of this time, so long as no disorder occurs to require interposition, the privacy of the dormitories is as much respected by the authorities, as that of the Grand Turk's seraglio by all good Musselmans.

Now, here you have the whole system in a nutshell—

its original design and its basis of right and reason. Considered from this point of view, what can you find in it exceptionable? Nevertheless, I am sure that the officers of colleges—those of this college at least—are not tenacious of this practice. They would be willing to abolish it to-morrow, if they were not convinced that the students would never be permanently contented under such a change. This doubtless will surprise you, and you will beg leave to record your emphatic dissent; but we *know* what we say, because we have tried the experiment. For a year or two—I am unable to say how long—while our numbers were fewer than they have since been, we practiced no visitation. We resumed the practice at the request of the students themselves. Those who desired to study, and these are always a majority, found their privacy so encroached upon by those who did not, as seriously to annoy them, and obstruct the prosecution of their regular pursuits. The nuisance continued to grow, with growing numbers, until it became intolerable; and the result was what I have stated. And so I do not doubt that it would be again, were we to discontinue the practice once more. I do not suppose that the evil would instantaneously reappear. Habits of lounging from room to room and wasting time in profitless trivialities, do not grow up in a day; but that they will grow up, where there is no check to prevent their development, in the midst of any community embracing a hundred or two of young men brought together at random, I believe to be as certain as that human nature always remains the same. The check afforded by the system of visitation is slight. It creates

only a liability on the part of individuals to be found, more or less frequently, inattentive to their own proper business, and interrupting their neighbors in the prosecution of theirs; but while it is inadequate to the complete prevention of such irregularities, as every plan short of constant supervision must be, it is efficient enough to prevent their becoming excessive. Still, I repeat, the Faculty of this institution regard the system of visitation so much more in the light of a favor shown to the students, than in that of an oppressive molestation, that, I have no question at all, they would abolish it without hesitation, were the majority of the fathers who have sons here, or even of the sons themselves after carefully considering the subject on all sides, to desire it.

Your second objection, I am disposed to believe, you will, upon reflection, retract. I know that it is not very uncommon for young men, when under the influence of excitement caused by some act of college discipline, to say things very disparaging to those whose only fault is, that, often with pain to themselves, they have faithfully discharged their duty; but surely, a gentleman who knows the world so well as the editor of the "Register," cannot for a moment believe that an individual fit to occupy the distinguished post of a professor of elegant letters or of the liberal arts, would be capable of practices which would make him unworthy to share the society of honorable men. Upon this objection I shall therefore dwell no longer than to express my regret, that imputations which may easily be pardoned to hasty and inconsiderate youth, prompted by excited feeling, should have found a place in

a journal, so widely circulated and so influential as the "Register."

In dismissing this topic, I would remark, that the duty of official visitation, necessary as under the existing college system it seems to be, is one which peculiarly tests some of those qualities of the college officer of which I made mention in my last communication, and especially those which relate to *manner*. Consideration for the student's necessary occupation will not ordinarily admit of more than a moment's delay during the visit to each room; and the extent of the round to be made admonishes the visitor that he must economize his own time. The brevity of the call, therefore, adds something to that tendency to stiffness which the consciousness of its official character is apt to impart to it. He who can discharge this duty so as invariably to give and receive pleasure at every repetition of it, must be considered to possess a temperament peculiarly adapted to the position he occupies. Yet the thing is not impossible. I have known it to be true of men who have been subjected to the test for years; and this I regard as an additional evidence that the system, however unlovely may be the colors in which you have painted it, is not in itself necessarily odious.

One additional remark in conclusion. While speaking of official visitation, I would express my belief that, if there were more unofficial visiting between officers and students than usually takes place in our colleges, the effect would be eminently beneficial. Let there be moments when the artificial relations of instructor and pupil shall be forgotten, or at least by common consent kept out of

sight; and there cannot fail to grow up a feeling of kindly personal interest between the parties, of wonderful efficacy in promoting the harmony and happiness of the entire community. On the part of officers, it is often difficult, or even impossible, to do in this way so much as they would; both because of the pressure of burthens public and private on their hands, and because of the large number of the young men between whom their attention must be divided; but they ought to invite and encourage the visits of students to themselves, so far as their engagements will allow; and I have no hesitation in saying, that they should reciprocate such visits whenever it may be in their power. It is my candid opinion that all the laws which were ever enacted for the good government of colleges, are weak and nugatory, compared with that boundless moral influence which it is possible for the individual officer to acquire, by winning the affections, instead of operating on the fears, of those whom he instructs. Perhaps there is no single means more effectual towards the accomplishment of this desirable end, than that he should manifest a prompt willingness to meet and reciprocate with them all the ordinary courtesies of life, in a spirit and with a manner which shall show that they are something more than empty forms.

University of Alabama, Aug. 8, 1854.

LETTER VII.

NO VINDICATION OF THE EXISTING SYSTEM OF COLLEGE GOVERNMENT CAN BE UNIVERSALLY SATISFACTORY; BECAUSE, FIRST, NO SYSTEM CAN BE EQUALLY SUITED TO STUDENTS OF EVERY AGE; AND, SECONDLY, THE POPULAR IDEA OF THE COLLEGE STUDENT IS DRAWN FROM THE CLASS WHO NEED LEAST TO BE GOVERNED.

I HAVE examined those features of the system of government common to the colleges of this country, which have been made especially the subjects of your strictures. If I have not removed your objections to them, I have at least shown that they may be plausibly defended. I think I have shown that, so long as colleges are organized on the existing general plan, these features present nothing unreasonable; perhaps I may say, nothing unnecessary.

Now, were I to examine every other regulation connected with the government and discipline of colleges to which exception has been taken in any quarter, and were I to detail with like minuteness the reasons which have led to the introduction of each into the code of college law, I have no doubt that I should be able to make as good a case in every instance, as I have done in the one or two I have considered. I ought to be able to do so, for these regulations have not been the creation of a day, of a year, or even of a century. They rest upon no foundation of mere opinion or judgment—not even upon the opinions

or judgments, uncorrected by experience, of the wisest men; but they are results wrought out by actual experiment, and by the comparison of different methods during the course of several centuries.

Yet after all, it cannot be denied that the most unanswerable vindication of the existing system of college government, leaves upon the minds of many, an unsatisfied impression, and that the reply will continually recur—“But you offend the self-esteem, you mortify the pride of character, you wound the innate feeling of personal dignity, in a sensitive young man, by subjecting him to a code of regulations fit only for the government of boys.” True, we do this; if a young man, whose maturity of years and fixedness of principle enable him to be a law to himself, chooses, on joining our community, to regard our system of law as having been established expressly for him. But it is not for such that we legislate; nor is it just to denounce our rules as oppressive, because there are some individuals for whom they are unnecessary. The difficulty is to induce the public—even the most sensible part of the public—to reflect, that all laws must be made to meet the cases of those who most need restraint, and not of those who need it least.

I have already, in a former letter, mentioned the fact, that the individual students who become subjects of college discipline, are almost invariably boys. Our rules allow us to receive candidates for admission at the early age of fourteen; and very many enter below sixteen. On the other hand, not a few have attained, or nearly attained, their majority, before becoming members of col-

lege; and the consequence is, that we have a community very heterogeneous in character, very unequal in power of self-command, very widely different in degree of manliness, very unfit to be all subjected to the same uniform regimen. In the younger classes we find usually a majority who have come directly from the schools, where their conduct has been subjected to the restraint of immediate and constant supervision. Such, even if they possess the power have not yet acquired the habit of self-control; and the almost irresistible propensity of juvenile nature to avail itself without consideration of every accidental opportunity to give way to frolic mirthfulness, on the slightest relaxation of the severe vigilance of school supervision, is carried into the college, and is not laid aside until familiarity with freedom neutralizes the temptation to extravagance. Life in college, indeed, very rapidly transforms the boy into the man. In such communities, especially where the numbers are large, the members of the several classes are almost as clearly distinguished from each other by outward signs of manner and deportment, as by reference to the official register; and acts of thoughtless frivolity, which in the earlier years are by no means rare, become almost unknown to the later.

It is a very great disadvantage of college government, that it can provide but one system of discipline for all variety of subjects; and that consequently, the stringent system which the more volatile—those in whom the boy spirit still predominates—require, is felt to be unreasonably oppressive and galling by the graver class who disdain even the suspicion of puerility. The popular

idea of the college student is drawn much more from the latter class than from the former; and, hence, such strictures as those of the "Register" upon the visitation of rooms, carry with them an appearance of weight and reason which they would hardly possess were it remembered, that this system does not exist for the supervision and restraint of those who need no restraint, but on account of those others who do need it, yet cannot possibly be separately reached. And the same might be said of nine out of ten of the rules existing in colleges for the regulation of the student's conduct.

It is a curious fact that, while the popular idea of the college student at the present day invests him very much with the character of a man—though many individual students are in fact but boys,—in the early history of colleges, both in this country and abroad, the case was completely the reverse, and the college or university student was looked upon and treated as a mere school-boy. It was this fact, indeed, which, if it did not determine the erection of colleges and halls in the universities, at least suggested the form of their organization. The Universities of England taught only, and assumed no responsibility for the deportment or morals of the students. The lecturers—ultimately styled professors—did nothing, and do nothing to this day, but lecture; they heard no recapitulations of the subjects by the students—that is, no recitations. But boy learners require both moral control and mental drilling. The colleges and halls were erected to subserve both these purposes. In these establishments the students were boarded, lodged, and kept under close

supervision. They were each governed by a master, assisted by one or more tutors as necessity might require. It was the business of the tutor to see that the youths duly attended the lectures, and to interrogate them upon what they heard—that is, to hear them recite. It was also his business to give them religious instruction, and to “do all that in him lay to render them conformable to the Church of England.” In addition to this, he had the further rather troublesome charge of “containing his pupils within statutory regulations in matters of external appearance, such as their clothes, boots, and hair,” with the somewhat unpleasant liability, in case his unmanageable urchins evaded his vigilance, expressed in the following clause—“Which if the pupils are found to transgress, the tutor, for the first, second, and third offense, shall forfeit six and eight pence; and for the fourth, shall be interdicted from his tutorial functions.”* Corporal punishment was inflicted, says Sir Charles Lyell, in the English Universities, so late as the time of Milton. The same appears to have been true in the early years of Harvard and Yale, in this country. Down to the commencement of the present century, the fagging system survived in both those colleges—a system which rendered the student, during his freshman year, the drudge of his fellow-students above him; and to quite as late a period, the whole body of the students were compelled to observances towards the college officers, which would now be held to be degrading, and could only then consist with the idea

* Sir William Hamilton's Discussions on Philosophy.

that the student is a mere school-boy. In those primitive days, nice questions of casuistry, as to how far a student may or may not, by his testimony, rightfully or honorably criminate his fellow, were unknown; but the youth who refused to testify—if that phenomenon ever occurred—was neither remonstrated with nor dismissed, but simply, I suppose, “licked!” However, we have changed all that, and very properly; but so far has the change gone, at the present day, that nearly all attempts on the part of college Faculties to use coercion of any kind, if not resisted *in limine*, are at least met with remonstrance and complaint.

From the foregoing statements, it is apparent that the American colleges have assumed to themselves the double duty, which, some centuries ago in England, was divided between college and University—the duty of instruction and that of government. It is true that the English colleges have done the same at Oxford and Cambridge, by that gradual and systematic usurpation by which the tutor has supplanted the professor in his functions, and by which the college has substantially superseded the University. But in undertaking this two-fold responsibility in this country, we have failed as I have heretofore shown, to copy from our models the devices by which they secure the ability to discharge it. Our college officers neither live in the same building nor eat at the same table with the students, nor are the premises shut in by walls, or secured by locks and bolts. In the absence of these material safeguards, we have spun around our colleges a cob-web of words; instead of imme-

diate and constant supervision, we have substituted law; instead of bolts and bars, we have invoked penalties; instead of substantial stone and mortar, we have built our reliance upon a barricade of paper. What wonder that the merest breath sometimes bears down the barrier before it!

University of Alabama, Aug. 10, 1854.

LETTER VIII.

AMERICAN COLLEGES ASSUME TOO GREAT A RESPONSIBILITY.—THE COLLEGE SYSTEM OF THE COUNTRY, CONSIDERED AS A SYSTEM OF MORAL TRAINING, IS A FAILURE.—IS THERE ANY REMEDY?

THOUGH as yet I have not explicitly stated what I believe to be the defect of our present college system, out of which, in spite of all the prudence, caution, and foresight of the wisest officers, we may fairly expect trouble more or less frequently to arise, my last letter, I presume, can have left little doubt as to my impressions upon that point. But, as I wish to be distinctly understood, I shall not leave my opinion to be a mere matter of inference. The simple truth is here—*American colleges assume a responsibility which they have not the power adequately to discharge.* They undertake not merely to train the mind and inform the understanding, but also to regulate the conduct and protect the morals. This great weight of responsibility was without doubt originally incurred in full view of its magnitude, and of deliberate purpose; but it was not incurred without a careful provision of the means which might render its fulfillment a possibility. In its origin, the college was strictly a family, and its government was a parental despotism. Constant and immediate supervision, locks, bolts, and bars,

and obligatory observances which would now be called degrading, stood, as I have shown, in place of our cobweb laws; and for penalties, there were personal restraint, privation of enjoyments, cumulation of tasks, and even that terror of childhood, the rod itself. The system, in its inception, was evidently designed for boys and none else; though it must be confessed that, at that primitive period, not only did boyhood cover a much larger space in human life than it does at present, but all ages submitted without murmuring to restraints which would not now be tolerated for a moment. Holmes, in three lines, gives us a happy idea of the state of things existing in those days:

“The people were not democrats then,
They did not talk of the rights of men,
And all that sort of thing.”

Sir William Hamilton tells us that colleges and halls for lay students were created “in imitation of the *Hospitia* which the religious orders established in the university towns, for those of their members who were attracted, as teachers or learners, to those places of literary resort.” It does not appear that, in the original design of the universities of Europe, whether British or continental, any control of the conduct or regulation of the morals of the students was contemplated at all. The researches of the writer just cited, make it evident that the exposures were very peculiar, which rendered the institution of some moral safeguards necessary. When we consider what precisely were these exposures, as they are described in an extract from the Cardinal de Vitry, which Sir William

quotes but does not venture to translate, we cannot without a smile endeavor to imagine the holy horror with which those respectable ecclesiastics who founded the colleges of Paris, must have regarded a proposition to give to them such a constitution as that of Yale, or Harvard, or Princeton, or the University of Alabama. In the view of those men, this constitution could not but have rendered these exposures tenfold more dangerous. In professing to throw up moral defenses around the youth committed to their charge, they aimed at realities and not at shadows; in place of empty prohibitions, they erected physical barriers; and they provided against transgression by the simple expedient of rendering it impossible. It is no part of my business to prove that they did not err in one direction as widely as we do in the other; it is enough that I show, that, having a definite object in view, they adopted means to accomplish it; while we, with the same object, adopt next to none at all. We have abandoned supervision—we have discarded the family arrangement—we have given up the college cloisters to the almost exclusive control of their juvenile occupants. No Cerberus in the form of a janitor guards the college gates—no blank, uncompromising wall shuts in the academic court—no “fat professor or lean and ghostly tutor” (I think I quote you correctly) glides along the passages—no shooting-bolt, as tolls the college curfew, obstructs all further commerce with the external world. In place of all these securities, we have introduced a single substitute: it is *law*; and it has failed. I do not find especially the evidence of this failure in acts of insubordination, of

which—of such at least as are serious—the occurrence is after all but rare; but I find, in my own personal experience as a student, and in my observation both as a student and as an officer, conclusive proof that the system of government existing in American colleges, considered as a system of moral restraint, is all but worthless. My own convictions would justify me in using even stronger language than this. To me it has all the character of an ascertained fact, a matter of immediate knowledge and not of inference or information, that initiation into the charmed collegial circle is, morally, rather a release from old restraints, than an imposition of new ones. The public eye no longer rests upon the neophyte; public opinion no longer encourages, intimidates, or guides him; he is, except for flagrant crime, substantially absolved from allegiance to the laws of the land; and, between him and the only authority which he does acknowledge, is interposed that unwritten "higher law" of colleges, the law of the *Burschenschaft*, which enables him to defy investigation, and baffle inquiry.

Is it reasonable to expect good to grow out of a system like this? And if young men emerge spotless from the ordeal of a college life, is it not plain that they do so, not in consequence of the system, but in spite of it? Vice and crime would be unknown but for temptation; temptation would usually be powerless but for opportunity. Youthful passions rarely fail to find the first; the American college system furnishes the second in its amplest form.

This system also, is such as to open to evil example a

field for the most powerfully pernicious influence. If Satan, in his fall, drew after him a third part of the host of Heaven, much more is it to be expected that one of his ministers on earth may lead astray no small proportion of a community of inconsiderate and impulsive young men. Social sympathy—the feeling of companionship—will often carry a youth along, where his conscience forbids him to go. If he betrays his scruples, he soon learns to blush with mortification at the ridicule they excite. What should naturally follow, but that he should presently cease to have a conscience at all? Truly it seems to me, that, had it been the original design of the college system, instead of guarding the morals of young men, to expose them to danger, and instead of watching over them, to abandon them to the protection of chance, a scheme more happily devised to effect this object could not have been sketched out. It has maintained its ground to this day through an unquestioning veneration of antiquity, though every feature that recommended it to the men of olden time, by whose wisdom it was planned, has long since been abandoned. Could now all recollection of the past be effaced, and could the question be brought up before the present generation as one entirely new, what ought to be the organization of an institution designed for the education of youth *and the guardianship of their morals*, I have not the least idea that the system now so all but universally prevalent would obtain the vote of a single man of sense in the entire civilized world.

Is there any remedy? Certainly there is. It would be a remedy—not one perhaps accordant with the spirit

of the age, nor likely to prove economical, but a remedy, nevertheless—to return to the system of the English schools of learning, as it existed down to the eighteenth century, to revive the distinction between University and College, to separate the business of mental culture from that of moral training, and to re-establish the wide difference between the functions of professor and tutor. Under this system, government, besides being rendered effectual by all the expedients I have specified, might be divided with us, as it was (and is yet) at Oxford and Cambridge, between many Colleges and Halls, and instruction could be given for the whole by a single corps of Professors, constituting the University Faculties. By this subdivision of the student body, the difficulty of controlling the whole would be much reduced. At Oxford, early in the fourteenth century, as Sir William Hamilton informs us, the number of halls and colleges was about three hundred; and at the present time, it is twenty-four. A recent visitor at that celebrated seat of learning informs us that no Oxford college has more than about one hundred and forty students, while some have as few as ten. Since the total number of students in the University is about fifteen hundred, it is evident that any difficulties which may arise in the government of a particular college, even though they should be aggravated to the point of rebellion, could produce no sensible effect upon the general tranquillity of the University.

In this country and in this age, however, a variety of causes render a resort to a remedy like this entirely impracticable. Every thing in our political principles and

our federal organization opposes concentration. All religious denominations stand here upon the same footing, and all of them *will*, whether it be well or ill for the cause of education in the end, have schools and colleges for the education of their own children, in the hands of teachers of their own persuasion. Such a thing as a privileged University, like those of England and France, could not exist here. And, moreover, the spirit of the age, impatient as it is of restraints even the most salutary, would not sanction the restoration of the prison-like quadrangle and the compulsory regularity of hours. The college would probably be deserted, and the experiment would fail. It is hardly necessary, therefore, to superadd the objection, that the remedy suggested would require a total reconstruction of all the college buildings in the country.

Is there no other remedy? There is one to which, little favor as it may find at present, especially with colleges which have invested large sums in costly buildings, I sincerely believe that the whole country will come at last: it is *to abandon the cloister system* entirely, and with it the attempt to do, what is now certainly done only in pretense, to watch over the conduct, and protect the morals of the student. I am aware that this is high ground to take. Deeply satisfied as I have been, from the day I became a freshman in college to the present hour, of the vast evil and the little good inherent in the prevalent system of government in American colleges, I perhaps should not even yet have felt emboldened to speak out so publicly my convictions, in the face of the

quiet contentment with which my compeers and the public everywhere apparently regard the existing state of things, had not one of the most eminent of our American educators long since condemned the system as publicly and as decidedly as I have done, and upon the same grounds. But Dr. Wayland, though he exhibits the evils which necessarily attend this system, in a manner irresistibly conclusive, hesitates to pronounce them sufficient to call for or to justify the abandonment of buildings already erected to serve as residences for college students. He confines himself to deprecating the erection of any more. I am disposed to take one step further. I say that Dr. Wayland himself has proved the system to be so pernicious, as to require that the ax should be laid directly at the root of it, no matter what the expense may be. But this subject requires a letter to itself.

University of Alabama, Aug. 12, 1854.

LETTER IX.

EVILS OF RESIDENCE IN DORMITORIES.—SYNOPSIS OF DR. WAYLAND'S
VIEWS ON THIS SUBJECT.

If I have dwelt much upon the moral and material securities with which the founders of the colleges at the English Universities sought to surround those institutions, I have done so only that I might render more striking by contrast our entire deficiency in those most important respects. But I am by no means unaware that all those stringent provisions have, by the entire disregard of their original design, which has grown out of modern abuses at Oxford and Cambridge, become, in those renowned seats of learning, entirely nugatory. I am aware that, to an outside observer at the present day, an English University would present rather the appearance of an abode of luxury, a precinct consecrated to physical enjoyment, than that of a chosen retreat of science, or a habitation of the Muses. I draw my illustration not from the Oxford of the nineteenth but from the Oxford of the thirteenth century; I speak of the usages, not of the twenty-four stately palaces of ease and dissipation which still exist; but of the three hundred halls, now nearly all extinct, where, in the time of the First Edward, thirty thousand youth bowed

their necks to the austere yoke of monastic rule. In those days, a wine-bibbing, dinner-giving, "tandem-driving, hunting, steeple-chasing, and horse-racing" Oxford student was unknown; but it was no uncommon spectacle, according to Sir James Nore, to see "the poor scholars of Oxford a-begging, with bags and wallets, and singing *Salve Regina*, at rich men's doors."* Those were the days when moral restraints in the Universities of England were a reality:—now they can scarcely be said any longer to exist.

I stated in my last letter that Dr. Wayland had thrown the weight of his high authority in opposition to the plan of providing buildings for the residence of students in an isolated community, during their college life. What he has so well said I would not venture to repeat, nor to what he has said would I add a single word, were it possible or probable that the persons whom these letters will reach would find access to his able examination of the same subject. The improbability of that, justifies me in repeating some of his arguments. In addition to the views which I have already presented, Dr. Wayland urges against the arrangements of the prevailing system, that they are *unnatural*. They remove the young from the enjoyment and benefit of family sympathies and society, at a time of life when these are of the highest value. They deprive them of that watchful attention, in time of sickness, and of that heedful care, in time of health, which are so important at this early age; and which in their new

* Princeton Review, July, 1854.

position there will be none to bestow. Moreover, in passing from the family circle into the artificial society of a college, there is at present a rude and harsh transition from a position in which they are sustained and guided by the counsel and solicitude of those on whom they are accustomed to rely, to one in which, as it must be in the great world at last, they have but themselves to consult and depend on, in every emergency. The transition is too abrupt to be courted, or to be probably beneficial.

Dr. Wayland further finds, in the unequal ages of the students who make up the college community, a reason for objecting to the cloister system. Small as is the amount of supervision, which the most anxious and vigilant Faculties can exercise over young men so situated, it is more than those of their pupils who are most advanced in years require. To prescribe to such their times for going and coming, or for study and relaxation; and to subject them to the necessity, little less than mortifying, of applying for special permission to do even so simple an act as to call upon a friend, or to that of rendering an excuse for receiving one at an hour not privileged by the rules, when by the laws of the land and the usages of society they are recognized as capable of self-government, seems as unnecessary as it is apparently odious. And yet, in a society where there can be but one rule for all, such regulations cannot be dispensed with; while the greater difficulty is, on the other hand, to make them stringent *enough* to meet the case of those who have no habits of self-government as yet established at all. This latter class, in truth, can never be adequately provided

for under our present college system; and the sooner we distinctly and candidly admit the fact, the better. If there be a student who requires the direct influence and prompting of a superior, whether to stimulate him to exertion, or (a rarer case, certainly, but one not very uncommon) to restrain him from too severe and injurious application, whether to aid him in the prosecution of his studies, or to guide him in the selection of his miscellaneous reading, or to advise him in the choice of his amusements, or to warn him against the approaches of temptation, or to arrest him in his first downward steps, should he unhappily incline toward vice, such a student is not conveniently or favorably or even safely situated in the heart of an American college, where no superior, however zealously devoted to his welfare, can know his habits, his wants, or his dangers.

The influence of our arrangements upon health is furthermore regarded by Dr. Wayland to be more or less injurious. The compactness of the community, and the confinement of all the necessary duties within a very narrow precinct, if they do not directly discourage and prevent the bodily exercise so important to the full vigor of the animal system, hold out at least no inducement to its practice. No trivial number of the cases in which students withdraw from colleges with impaired health or broken constitutions, are cases in which disease has been either engendered, or at least aggravated, by neglect of suitable exercise. The arrangements of college buildings afford few conveniences or comforts, in cases of sickness; and should an infectious disease make its appearance, it is

difficult if not impossible to prevent its spreading through the entire community.

In looking at this question in its moral aspects, Dr. Wayland takes altogether the view which I have already presented. He enforces his opinion by one or two considerations which seem to me to have a peculiar importance. In regard to the dangerous influence of evil example, he observes that the votaries of vice are much more zealous in making proselytes than the devotees of virtue. No remark could be more emphatically or more sadly true. There is apparently a malignant pleasure felt by the vile in marking the gradual steps by which the pure in heart become wicked like themselves; and it is with a sort of fiendish ingenuity that they invent allurements and ply seductive arts, to the end that they may ruin where they profess to befriend. The unsuspecting, unreflecting natures of ingenuous youth, make them especially prone to yield to those whose greater familiarity with what is called life, but is in fact too often only the road to death, gives them a seeming superiority and lends to their opinions and their example a most mischievous fascination. Some such, we may say with too unfortunate a certainty, will usually be found wherever one or two hundred young men are assembled together as members of the same community. Some such will, indeed, have been almost unavoidably attracted to our colleges, by the peculiar social features which they present; and by the undeniable fact, which I have heretofore illustrated, that the college is a place of freedom rather than of restraint. Is there not here an exposure dangerous to every unsophis-

ticated youth, and liable too often to become absolutely ruinous?

It is further observed by Dr. Wayland, that where a number of persons are collected together, and by the circumstances of their association are disconnected almost wholly from the surrounding world, there will inevitably come to be recognized among them certain peculiar principles of action, there will come to be received certain peculiar convictions of duty, which are not elsewhere recognized, but derive their character from that of the community among whom they originate. So striking an illustration of this truth has been presented in the discussion which occupied the earlier letters of the present series, that I consider any further explanation of the meaning of the foregoing proposition unnecessary. It is sufficient to say that, in the college code, the highest honor is not bestowed upon that which is good and right; nor the sternest disapprobation awarded to that which is bad and wrong. To be gentlemanly, is better than to be moral; to be generous, is better than to be just. It is much to be doubted whether a protracted residence in a moral atmosphere, characterized by the prevalence of doctrines like these, can exert a healthy influence upon the character; or whether the usages to which it familiarizes the youth are such as to render the man either better or happier.

Dr. Wayland does not forget to glance at the prejudicial effect which the long-continued intercourse of young men, exclusively or nearly so, with each other, cannot fail to exert upon their manners; to which I might add the tendency, so constantly noticed that I suppose it must be

esteemed inevitable, of the language of their conversation, under similar circumstances, to degenerate into rudeness, or something even worse. That men will be rude, that they will be vulgar, occasionally, without having these propensities developed and nourished in them by any species of hot-house culture, and in spite of all the purifying influences of the best society, I am well aware; but that is no reason why, without any manifest necessity, we should expose all our young men who aspire to a high order of education, to an influence which can hardly fail to blunt, to some extent at least, their native delicacy, or vitiate their sense of what constitutes true politeness.

While thus every argument derived from the fitness of things, and from considerations of health, of morals, and of manners, seems directly to condemn the college cloister system prevalent in this country, hardly, I think, on the other hand, will a single substantial advantage be found to recommend it. That it is cheaper to the student, Dr. Wayland has, in my opinion, satisfactorily disproved. That it is immensely more expensive to the public at large, where colleges are created and sustained by their munificence, he has made equally evident. Indeed, where money to the amount of one hundred thousand dollars or more, has, in a single institution, been invested in dormitories alone, and where, as in the University of Alabama, not one single dollar of revenue is derived from this investment, in the way of rent or otherwise, it requires no argument to show that, if the dormitories are unnecessary, all this is a dead loss. In our own particular case, it is worse than a dead loss; for not only do these buildings

return no income to the treasury, but they keep up a continued drain upon it, to the extent of several hundred dollars per annum, to preserve them in decent repair, and in tolerably habitable condition. Is there a single plausible reason to be urged in favor of the perpetuation of such a system, but the unfortunate fact that it cannot now be abandoned here without a heavy pecuniary loss?

University of Alabama, Aug. 15, 1854.

L E T T E R X.

EVILS OF THE DORMITORY SYSTEM FURTHER EXAMINED.—ITS TENDENCY TO
MAKE THE INTELLECTUAL QUALIFICATIONS OF INSTRUCTORS A SECOND-
ARY CONSIDERATION.—IS IT POSSIBLE TO ABOLISH THE SYSTEM?

THE evils which I have thus far considered as resulting from the system of residence common in American colleges, are such as proceed from the direct influences exerted by the system on the student himself. In former letters of this series I have, however, pointed out to what extent the successful administration of college government is dependent upon the personal character and disposition of the officers who conduct it; yet this dependency, it is now evident, is almost entirely a consequence of that peculiar organization of our academic society, out of which so many other evils grow. It is certainly at present an urgent necessity, in the selection of persons to fill the responsible posts of instructors in colleges, to give anxious attention to considerations very different from those which qualify a man to impart knowledge, or render him likely, by his reputation, to give character to the institution of which he becomes a member. Yet these latter considerations are undeniably, in intrinsic importance, paramount to all others. It is a simple truism to say that to be a

good teacher, one must first of all things know how to teach; but it by no means follows that to be a *successful college teacher*, the same qualification will stand in the foremost rank of importance. Profundity of learning, fluency of language, fertility of invention, and felicity of illustration, are hopelessly buried, so far as college usefulness is concerned, in one who possesses not the art to conciliate, or the power to control, or the faculty to stimulate, or the wisdom to advise, those with whom he is constantly in contact in the relation of a moral governor or guide. These qualities are no doubt of great value under any circumstances; but it is a peculiarity arising out of the nature and magnitude of the responsibility we are compelled to assume, which places them, in colleges organized as ours are, so far above those intellectual endowments and acquisitions which we naturally associate with the character of an able teacher.

It is very certain that much of the success of a collegiate institution, in the popular sense of the word, depends upon the consideration in which its officers are held, as men of letters and science, in the community from which it draws its patronage. There is no virtue in vested funds, or costly buildings, or legislative grants, or even in libraries and cabinets and apparatus of science, however magnificent, to attract to a particular spot such multitudes of interested and willing learners as throng some of the favorite colleges of the United States. No allurements which wealth can spread out have power to draw disciples around the academic chairs of teachers who are themselves deficient in that moral magnetism which nature only

can bestow. Nor will this or that form of internal organization, or a more or less severe adhesion to any particular routine of instruction, to any important degree determine how far any given set of men, in any given school of learning, may be successful in securing that evidence of popular approbation, which numbers are commonly supposed to afford.

It is certainly, then, in the very highest degree desirable that in the selection of men to fill the very responsible positions of officers of instruction in colleges, there should be nothing in the nature of the duties they are to be required to discharge, which shall prevent the very first consideration from being given to their mental qualities and acquisitions, their learning and their power of luminous utterance,—qualities which, while they make them able and successful and often fascinating in the lecture-room, render their names also household words in the dwellings of the people. Suppose a board of governors to be untrammelled by any considerations such as these, in the choice of individuals to fill the chairs which may become successively vacant in a college under their control, or the new chairs which they may create; suppose, further, that they have it in their power to offer a remuneration sufficient to command the services of the most eminent talent the country can furnish; suppose that they make known, as they naturally will on every such occasion as widely as possible, the existence of the vacancy, and invite competition from men of ability, every where, to fill it; they can hardly, under these circumstances, fail to secure not only able men, but men whom the people know to be able. Such men will never be deserted, unless for men of greater

presumed ability; and thus there will be maintained, between all institutions governed by these principles, an honorable and advantageous emulation, which will secure to each a gratifying popularity, and a fair and encouraging amount of patronage.

So long, however, as the first quality to be looked after in a college officer is not in his ability, nor his learning, nor his well-earned reputation as a man of letters or science, but his capacity for governing youth, and for managing all the complications which arise out of the administration of the internal police and penal laws of our artificial form of society, there is no absolute security that the men selected will be eminently able, or that they will have that hold on the confidence of the surrounding community which springs from an already established acquaintance with their names and characters. They may even be, and they often are, entirely unknown; and thus, in cases of difficulty, they have to contend against that indifference in the public mind which is usually felt towards such as have only the stranger's claim to sympathy. I do not forget that reputation is a growth of time; and that, when a valuable college officer is secured, it is all the better that he is secured young. But I much question whether an individual can have had time to manifest that moral fitness to grapple with the difficult responsibilities which a college officer has to encounter, and which is under our system so indispensable, at an age earlier than that at which his intellectual superiority, if he possesses it, begins to lift him above the level of common men.

Our system of obligatory residence, therefore, in build-

ings specially erected for college purposes, involves the great evil of much restricting the freedom of choice, on the part of electing boards, in providing suitable officers for the institutions under their care. And since that system seems really to be recommended by no positive advantages, but to be open, on the other hand, to the very grave objections which I have endeavored in my foregoing letters to exhibit, we find in this last consideration a forcible argument in favor of its total abolition.

But suppose this system of compulsory residence abolished, what is the alternative? Let the students find their own residences, as all other persons do, young or old, wherever they can, among the citizens of the surrounding community. They are now in the community but not of it. The college walls present an impenetrable barrier to all scrutiny of their conduct and actions. They are not subject to the restraining influences of public opinion. One of the strongest moral safeguards known to mankind has no existence for them. We have seen that the presumed surveillance of college government is nothing but a nullity. By closing our dormitories and sending back our students into the world, we abrogate for them the freedom of the microcosm, and re-subject them to the common restraints of society. This expression, the freedom of the microcosm, which drops accidentally from my pen, suggests, by similarity of sound, another phrase which we sometimes hear in our metropolitan towns—the freedom of the city. What this freedom is, precisely, at the present day, I do not know; but it is now and then presented, sometimes with pomp and ceremony, to the favored

guests of the municipal authorities. Now, if any thing could be wanted to demonstrate the truth of what I have asserted—that admission into college is rather an introduction to freedom than a subjection to restraints,—it may be found in the fact that young men who are not students are sometimes, by their friends among the initiated, invested with this freedom also,—not with ceremony, nor by any explicit form of words, but by being introduced within the privileged limits, and made temporary denizens of the charmed circle. Here, secure from the reach of any prying eye from without, and unmoved by shadows which possible coming “exculpations” sometimes cast before them upon the spirits of legitimate residents, they are ready to lend their efficient aid in promoting any disorders which may incidentally spring up, and they join with especial unction, as occasion arises, in those vocal and tintinnabulary performances with which youth, in seasons of excitement, seem to delight to “make night hideous.” I do not know to what extent the officers of colleges elsewhere may have remarked this evil; and I do know that in some places there is little congeniality or intercourse between “town and gown;” but I have no idea that any college constructed on the plan popular in this country is entirely exempt from the nuisance, and I am persuaded that the University of Alabama has occasionally suffered from it deeply.

But when I propose that our dormitories shall be closed, and our students shall be left to provide residences for themselves among the citizens of the neighborhood, I anticipate the reply that my remedy, however plausible in

theory, will in many cases, and notably in that of the University of Alabama, be impracticable. Not only is this institution situated an entire mile beyond the corporate limits of the city of Tuscaloosa, but, by an intentional precaution of the Board of Trustees, it holds the title to nearly every square foot of land for at least a quarter of a mile in every direction around it; and thus repels the approach of those who might be disposed to build in its vicinity. The default of a social neighborhood might of course be repaired, by removing this restriction, provided there were any disposition to build; but as none such has been manifested hitherto, and none such is likely to be awakened by any immediately existing causes, my proposed remedy is, I admit, only applicable to the case of this University, on the condition that the center of its operations be transferred to the heart of the town. The sacrifice of the buildings now used as dormitories, and their abandonment, if necessary, to ruin, would be well repaid by the much higher benefits which would attend the change. It would, in point of fact, be no sacrifice at all, since, as I have heretofore stated, these dormitories return no income for the large investment wrapped up in them, but require, on the other hand, a considerable annual expenditure to keep them in repair. But the proposed removal would involve a more serious sacrifice than this. The buildings erected to subserve the purposes of instruction, and which embrace the library, the laboratory, the cabinets of minerals, rocks and fossils, the lecture rooms, and all the rooms for recitations, to say nothing of the dwellings of the officers, would not only have to be aban-

doned here, but replaced in the new locality. The question how far this consideration must be regarded as tending to make the proposed reform hopeless, I reserve for examination hereafter.

University of Alabama, Aug. 16, 1854.

LETTER XI.

EXPERIMENT PROPOSED FOR THE CASE OF THE UNIVERSITY OF ALABAMA.
CONSIDERATION WHICH SEEMS TO HAVE DETERMINED THE CHOICE OF
LOCATION FOR MOST OF THE COLLEGES OF THE UNITED STATES.—ITS
FALLACY.—THE DORMITORY SYSTEM WILL BE ABANDONED; BUT ONLY
VERY GRADUALLY.

IN my last communication I maintained that the proper remedy for most of the evils which attend the administration of college government, and which tend to affect injuriously the morals of the youth who are subject to it, as well as indirectly to detract, perhaps, somewhat from the consideration which their officers are likely to command from the public, is an entire abandonment of the cloister or dormitory plan of residence. I admitted the difficulty of doing this in cases where the college is, like the University of Alabama, separated by a considerable space from any community capable of furnishing the accommodations which the college itself ceases to supply. I had the question under inquiry, how far the consideration of the great sacrifice of property which must usually attend the removal of such an institution, though the removal should be but for a mile or two, is likely to render the proposed remedy impracticable. I do not purpose to hazard any general decision of this question, further than to remark that, so great are the advantages which

the presence of a school of large resort usually brings to the town in which it is situated, that when the trustees of a popular college manifest a serious disposition to remove it, the expenses attendant on the erection of new buildings are not likely to fall upon themselves. Be this as it may, the University of Alabama possesses a special advantage for the trial of an experiment of the kind I have proposed. It is not necessary, in order to make such a trial, to abandon even the dormitories at once. By the liberality of the Legislature of the State, the large and substantial building formerly occupied as the State capitol, has been made the property of the University. Now, for several years, it has been true, that the number of students here has been too great to find convenient accommodations in the dormitories; and in consequence of this fact, the Board of Trustees, one year ago, resolved on the erection of an additional building. An appropriation was made which was presumed to be adequate, plans were drawn, specifications prepared, and proposals invited, by public advertisement, for the execution of the work. None of the proposals fell within the limit of the appropriation, and consequently no contract was made. At their session in July last, the Board were unable, for want of a quorum, to reconsider the subject; but the necessity for some additional accommodations to meet the wants of the students is no less urgent than it has been heretofore.

Now, instead of burying an additional fifteen thousand dollars by the side of the one hundred and fifty thousand dollars which they have already buried here in brick and mortar, let the board devote five thousand, if that sum be

necessary, to the restoration of the State-house (an infinitely better building than the very best that stands upon the University campus) to a condition fit to serve for college purposes; and let them then provide that the senior class, to begin with, shall attend all their exercises there. This senior class will of necessity be obliged to find lodgings in town. They will relieve the pressure on the dormitories, which occasionally now makes those buildings absolutely unpleasant residences; and an experiment, on a limited scale, of the advantages arising from subjecting young men to that direct influence of public opinion which serves as a more wholesome restraint than any that a college faculty can exercise over the occupants of college cloisters, will be made without disadvantage to any one. There will be saved, too, at least ten thousand dollars, which is now in a fair way to be sunk in that gulf of unprofitable investment, where so many kindred thousands have already been swallowed up for ever.

Should the result of this experiment prove satisfactory—and that it would, I entertain no doubt whatever—the junior class might next be transferred to the city in like manner. Should *all* the classes ultimately be removed—and whether they would or not I believe would depend upon the manner in which the demand for lodgings should be met in town—it would matter little what should become of the buildings standing on the college campus. For every purpose connected with instruction, the State-house, in its transformed condition, would present ample accommodations and facilities; and, remarkable as the fact may seem, it would furnish to the library

and to all the departments of physical science except astronomy, *vastly more suitable and more convenient accommodations than any* which can be found in the buildings on the University grounds, and *which were erected specially for the purposes to which they are devoted*. This is one of the happy results of employing men to build for special purposes who do not understand the purposes for which they build.

Here, then, for the case of the University of Alabama, I offer a definite and specific plan. And as the trustees of this University are shortly to be in session again; and, as they cannot escape or evade the question what shall be done to relieve the pressure on the dormitories, I earnestly solicit their attention to this proposition, before they resolve to entangle the institution still more inextricably than it is at present, in the meshes of a bad system.

It seems to be by the accident that we possess the abandoned State capitol, that a mode of ultimate relief from the trammels of our present organization is easily opened to us. But many others, situated precisely like ourselves, have not a similar advantage. It is worth while inquiring how came we, how came they, originally to be in such a situation? How came so many of us to occupy situations chosen evidently in each case upon some uniform principle of selection (since the peculiarities are every where the same), and what is this principle? We find, first, that a large number of the colleges of our country are planted in retired and quiet portions of the interior; and secondly, that instead of being placed in the

midst of any community, even that of a small country village, they are situated at some moderate distance from such a spot, sufficient to be measured by a walk of perhaps half an hour. There has evidently been a common design in all this, and it is clearly traceable to a fear of the dangerous temptations which are presumed to lie in wait for youth, wherever human beings are gathered together in society. These temptations are greater in large towns; therefore large towns are, first of all, sedulously avoided. They are not absent even from small towns and villages; therefore small towns and villages are in like manner tabooed. Yet as neither young men nor their instructors can conveniently live cut off from all communication with their fellow beings, the neighborhood of the lesser town is tolerated; but it is held at such a convenient distance that, if it possesses any allurements to lead young men astray, such yielding youths can find them out without any trouble at all, and enjoy them with that satisfaction of conscious security which arises out of the knowledge that their instructors and guardians are quietly housed a mile and a half off. The fact is, that all this reasoning, from beginning to end, is founded in the most mistaken impressions in the world. The temptations of great cities do not corrupt the youth of great cities, any more than the differing, but no less real, ones of the country, as a general rule, corrupt the youth of the country. The grand melo-drama which is placarded all over Royal street in Mobile, arrests no eager glance from the Mobile lad as he passes along on his way to his schoolboy tasks.

Familiarity breeds contempt, indifference, unconsciousness. And so it is with all other presumed fascinations of the same nature. In like manner, young men from abroad, sent to commercial towns to become initiated into the ways of trade, though entirely free to dispose of their evenings as they please, do not more frequently contract bad habits in such places, than students in our most secluded colleges. Facts further demonstrate that there is actually less complaint of irregularity and dissipation in those colleges in cities which have no dormitories, than is often heard in those country institutions where compulsory residence in college buildings is a feature of the system. This is true of Columbia College and the City University, in New York; and also, according to Dr. Wayland, of the Universities of Glasgow and Edinburgh, in Scotland.

To this false notion, therefore, of what the moral safety of young men in college requires, we evidently owe the location of so many of these institutions in situations where the provision of dormitories for the accommodation of students is an absolute necessity, and where a change of system without a change of site is quite impossible. The evil in many cases is done; and the money that has thus been, as it seems to me, lamentably wasted, cannot now be restored. But it is to be hoped that a similar perversion of means which might be so much more wisely employed, will not continue hereafter to be made—or not at least to so great an extent. It is doubtless too much to expect that in all, or even in many, of the institutions

so unfortunately situated, there will be any very early change of plan. The conviction that a change is desirable is far from being yet universal; and if it were so, the means for effecting the change could not be immediately forthcoming, nor perhaps could they be obtained at all. The needed work of reformation must evidently be a work of time; and not only that, but of a great deal of time. It may be expected to be accomplished somewhat in the following manner. Those institutions which shall do away with the cloister system, and those new ones which shall be erected without ever adopting it, will become, with the progress of information, so much more the favorites of the people than the rest, that these latter will, one after another, be compelled to reform themselves, in order that they may maintain any thing like an equal competition for the public patronage. By degrees, therefore, change will make its way into all those institutions in which it is a possibility; while for those in which it is not, no alternative will remain but to dwindle away and perish. It may take a century to accomplish all this; but that it will be accomplished, I entertain not the slightest doubt.

Twelve years have now passed since Dr. Wayland published his judicious views on this subject to the world. That his little volume has been effectual in preventing much financial folly of which the country would otherwise have been guilty, in connection with college buildings, there can be no doubt; but the frequent evidences which appear that there is still work of this kind to be

done, sufficiently prove that the perusal of this valuable book has not yet been quite universal. If through the medium of these letters I accomplish no other good than to draw attention to an authority so much more competent to pronounce upon subjects of this kind than I am, I shall be satisfied that my labor has been well spent.

University of Alabama, Aug. 17, 1854.

LETTER XII.

POSITIVE ADVANTAGES OF LARGE TOWNS AS SITES FOR SEMINARIES OF
LEARNING.—CONCLUSION.

HAVING expressed the opinion that the consideration which appears to have determined the location of so many of our colleges in situations remote from large towns, is without any substantial foundation, I should leave the discussion of the subject incomplete, should I fail to point out some of the advantages which such towns possess as sites of seminaries of learning, and which appear to have been almost entirely overlooked. The simple advantage already adverted to that they afford convenient accommodations to students, in regard to board and lodging, though the first to arise in the course of my argument, is far from being the first in point of importance. There are others so obvious that it would seem impossible they should be disregarded, had we not the fact before us that they are so, in probably a majority of cases. Some of these, in their influence upon the prosperity and usefulness of an institution for the education of young men, are so far above the imaginary security to morals which is believed to be found in the retirement of the country, as to demand from the founders of such institutions the very earliest attention, and to yield to no consideration whatever save the single one of healthfulness. That the spot

selected as the site of a University should be free from liability to frequent visits of epidemic or pestilential diseases, is of course a condition paramount to every other. But next to this should obviously come a regard for the convenience of the people whom the institution is designed to benefit, and a consideration of the manner in which the circumstances of location may facilitate or embarrass the operations of the institution itself.

No one will deny that those parents whose residences are so immediately in the vicinity of a college, that their sons may be educated without being withdrawn from the genial influences of the family circle, enjoy a great advantage over those who are compelled to send them to a distance from home; more particularly if, in so doing, they have no choice but to consign them to the artificial society whose unpropitious influence I have endeavored to point out, in speaking of the inadequacy of college government to supply the place of those restraints which it supersedes. In proportion as a college is retired, in the same proportion is the number of those diminished, to whom this great advantage is available. Retirement is therefore purchased at a large sacrifice, even if we look at the question as one which concerns only the morals of the youth it affects. For were college government capable of accomplishing all it undertakes—and we have seen how far at present this is from being the case—it would ill supply the loss of that watchful and anxious solicitude which surrounds every young man in the bosom of his own home. I might, to this consideration, add that of the greatly increased expense which attends the education of a son at

a distance from home; a consideration of so great importance with many, as quite to determine the question whether he shall enjoy the benefit of a college education or not; but this is too obvious to require more than an incidental mention.

It is evident that, in a large town, there will usually be a considerable number of students residing with their parents. It is also as generally true that, owing to the denser population of the country in the vicinity of such towns, many more will be within such easy distance of their homes, that they will be more or less under the control of domestic influences. These are not only themselves benefited by this cause, but they serve in some degree to infuse a better leaven into the whole mass, than can reasonably be looked for where almost every one is beyond even the occasional observation of those who are most deeply interested in his welfare, and likely earliest to detect, when occasion arises, any incipient habits of idleness or vice. This consideration strongly recommends populous towns as sites for seminaries of learning; and detracts much from the force of the argument, were it not otherwise illusory, urged in favor of rural retreats as being more favorable to the preservation of good morals among young men under education.

I should do wrong to ignore, as I may seem to do, the presumption (continually put forward) in favor of the country, that its calm tranquillity predisposes to thought, and soothes the mind into a fitting frame for study. Without being in the least disposed to deny that quiet is necessary to concentration of thought, I repudiate the assump-

tion that such quiet, to the full extent to which it is needed, is not to be found in large cities. If study were a pursuit to be prosecuted in the open streets, the argument might have a weight, which, in the question of fact before us, it lacks. The academic halls of Yale College, New Haven, and of Columbia College, New York, possess every recommendation of noiseless tranquillity which is to be found in those of the University of Alabama; nor have all the thunders of the great Babel of London power to penetrate the recesses of the British Museum, or to disturb the researches and the meditations of the patient book-worms who plod among the treasures of its vast library.

Nor need it be said that the uproar which assails the ears of the student, as he emerges from his retirement into the streets of a great city, creates an unfavorable, or even an undesirable, distraction of his thoughts from the subjects of his studies. It is good that the bow should be unbent; and the more complete the recoil, the better. The student studies to little purpose, who is studying always. The muscle becomes capable of but a languid effort which is ever on the strain. Let the hours of relaxation be hours of relaxation in earnest, that in those of study the mind may bring to the task all the energies of an unexhausted vigor.

But large towns are preferable, also, to small ones, as situations for seminaries of learning, because they place these institutions more conspicuously in the view of the whole people. At one time or another, almost every citizen of a State visits its principal city. While there, the father of a family will look with especial interest upon the

University in which he designs to educate his son; and every one, whether he be drawn toward it by such a motive or not, will naturally rank it among those objects which earliest deserve the attention of the stranger. Intelligent men from every part of the country become thus acquainted with the institution itself, and with the officers who conduct it. It occupies a larger place in their thoughts than it otherwise would do. They learn to view it with a pride proportioned to its celebrity, and it grows itself in repute by the operation of the very causes which acquaint them with it. Its public exhibitions are also attended by larger and more intelligent audiences than can usually be gathered in the country; the young men who come forward as performers are made conscious that they have a more discriminating audience to please, and a more honorable name to gain by their successful efforts; ambition is thus stimulated, and higher excellence is the natural result.

But there are still other important advantages to be gained by the location of colleges in populous towns. If such an institution would be celebrated, its professors must have a personal reputation as men of letters and science; and this is what cannot be gained by any ability or any success in the routine of elementary instruction. But if they would themselves prosecute study, they must have access to the collected results of past intellectual labor, in the valuable libraries which can only be looked for at present in our large towns. In saying this, I do not overlook two facts: first, that we have really very few public libraries yet in this country of which we have any great

reason to be proud; and, secondly, that all colleges have, or intend to have, libraries of their own. But, in regard to the first point, it is certain that our best libraries are, and are always likely to be, found in our largest cities; and as to the second, whatever value the libraries of particular colleges may have now or hereafter, it is manifestly absurd to suppose that one in twenty of the whole number will, in any length of time, become adequate to the wants of a profound scholar or philosopher. No amount of talent or industry can ever elevate to the rank of authorities men who are deprived of the necessary facilities for research. If, therefore, we would give our college officers the opportunity (I do not say that all would improve it), but if we could give them the opportunity to become honorably eminent, we should place them where they may have within their reach such means to become so as the country affords.

To these considerations we may add, that, in illustrating the laws of nature, it is necessary to employ much delicate and costly apparatus. Instruments of great value are liable to occasional derangements, the correction of which it is not wise or safe to intrust to rude or inexperienced hands. It is rare indeed to find, in an obscure country town, artisans competent to undertake the repair of articles which, even for their ordinary use, require special training and peculiar skill. To send them to a distance involves both expense and delay; to say nothing of the hazard of conveyance, often, over ordinary roads, which is so great as not seldom to involve a more serious damage than that which it was sought to correct. In the large

towns are to be found the manufacturers of this species of apparatus; or at least persons whose occupations are so far analogous as to insure in them the possession of a skill which may be trusted with comparative safety. This is a consideration of great practical importance. In consequence of trifling accident, I have, in more instances than one, known instruments to be set aside and to remain unused for long periods of time; and in others I have known them to be irreparably injured in unskillful hands, or rapidly to deteriorate in consequence of attempts to employ them when they were not in proper condition to be used.

After what I have said, it may seem trivial to mention so apparently insignificant a disadvantage of a situation remote from the great marts of trade, as the occasional failure of text books for ordinary use in college classes which, in spite of every precaution, appears to be occasionally inevitable. Nor would I allude to this, if I had not, in many instances, both seen and felt the extreme inconvenience resulting from such a failure. And it is with reason that I say that no ordinary precaution seems to be entirely adequate to prevent the occasional occurrence of so untoward a state of things, since I have seen the whole business of providing text books taken out of the hands of booksellers, and entirely assumed by the college itself, without securing any very sensible improvement in this respect. In a situation such as are all those to be found in the interior of Alabama, the distances from which supplies of this kind are to be brought, the dangers of the seas, the uncertainty of the rivers, and the irregularities of

land conveyance, conspire in no unfrequent instances to defeat all the arrangements of the wisest human foresight, and thus to leave a college for months in a state of great embarrassment, from a cause which, at first view, might seem the least likely of all to be an occasion of annoyance.

For these reasons combined, it is my well-settled belief that, in the selection of a site for a college, the most populous town should be preferred before any location in the country, however apparently tempting; and that no consideration should be allowed to disturb this preference, except that of healthfulness only. And when we consider that, in the course of human events, it is possible, and in this country not very improbable, that a small town may become a large one, especially when stimulated in its growth by the presence of a great seminary of learning; and that suburbs are likely to be swallowed up and lost in the expansion of the towns to which they belong; it will be obvious that the most careful preference originally given to seclusion and retirement can at best but secure a very temporary enjoyment of the advantages which such situations have been idly imagined to possess.

The design with which I have ventured to undertake this series of letters is now answered. I had not in view, in writing them, so much to vindicate any existing state of things in the University of Alabama, or to urge with any strong anticipation of success, any change of such of its features as I suppose to be capable of improvement, as to correct certain of what seem to me to be errors of public impression or opinion in regard to colleges, some of

them of long standing and of evidently extensive prevalence. In this, if I have not succeeded, I trust I have done enough to induce reflection, and perhaps to elicit from abler minds a more thorough examination of the whole subject.

F. A. P. BARNARD.

University of Alabama, Aug. 18, 1854.

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PROCEEDINGS

AT THE INAUGURATION OF

FREDERICK A. P. BARNARD, S.T.D., LL.D.,

AS

PRESIDENT OF COLUMBIA COLLEGE,

ON

MONDAY, OCTOBER 3, 1864.

PUBLISHED BY ORDER OF THE BOARD OF TRUSTEES.



NEW YORK:
PUBLISHED BY HURD AND HOUGHTON,
401 BROADWAY, CORNER OF WALKER STREET.

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Gift of
Andrew P. Peabody, J.D.
(H. C 1826.)

RIVERSIDE, CAMBRIDGE:
PRINTED BY H. O. HOUGHTON AND COMPANY.

INTRODUCTORY NARRATIVE

At the stated meeting of the Trustees of Columbia College, in March, A. D. 1864, the President of the College, CHARLES KING, LL. D., tendered to the Board his resignation of the office which he held, in the following letter:—

COLUMBIA COLLEGE, PRESIDENT'S ROOM,
2d February, 1864.

DEAR SIR,—In pursuance of the purpose announced by me yesterday at the meeting of the Trustees, I hereby tender my resignation of the office of President of Columbia College, to take effect at a period not later than the next Commencement, at the close of the month of June, or at any earlier date that may possibly be deemed advantageous for the College.

I am admonished by advancing years of the need of repose, and feel that the daily responsibilities and cares of the Presidency are becoming too burdensome.

In thus taking leave of a position which for the period of fifteen years I have occupied with great personal satisfaction and pride, I beg to express to you, and to the gentlemen of the Board, my high appreciation of the courtesy and consideration which have ever marked their personal and official relations with me, and to assure them and you of the constant regard and respect of

Your obd't hbl. serv't,
CHARLES KING,
Pres't Col. Coll.

The Hon. H. FISH,
Chairman Board of Trustees of Col. Coll

Upon the reading of this letter, the Trustees passed the following resolution:—

Resolved, That the resignation of President King be accepted, to take effect at the end of the present term, at the close of Commencement; and that a committee of three persons be appointed to report appropriate resolutions.

Bishop Potter, Mr. Bradford, and Mr. Ruggles were appointed the committee.

At a meeting of the Trustees held April 4th, Bishop Potter, from the committee appointed to prepare resolutions, in consequence of the resignation of President King, reported as follows:—

The committee appointed to report appropriate resolutions for the adoption of this Board, on occasion of the resignation of President King, beg leave respectfully to offer, for the consideration of the Trustees, the following preamble and resolutions:

Whereas our esteemed associate of many years, CHARLES KING, LL. D., has tendered to this Board the resignation of his office as President of Columbia College, assigning as reason for the step that he is admonished by the advance of years of the need of repose, and feels that the daily responsibilities and cares of the Presidency are becoming burdensome;

And whereas this Board has felt that a resignation so tendered, after many years of faithful service, could not be properly declined, and has accordingly accepted the same, ordering that it shall take effect at the end of the present collegiate term, the latest day named in the communication of the President;

And whereas the presidential term of Dr. King has been distinguished by the removal of Columbia College to its present superior site, by much development and expansion of its educational system, and by very considerable enlargement of

its means and appliances for instruction, an increase in the number of students, and a consequent augmentation of its importance and influence;

And whereas the bearing of the retiring President in his official relations with this Board has ever been marked by courtesy and kindness, by a frank, generous, elevated, and genial spirit, which engaged personal regard while it contributed to the pleasantness of our intercourse:

Therefore, Resolved, That the Trustees of Columbia College contemplate with much sensibility the approaching retirement of President King from a position that he has so long filled with untiring zeal and eminent ability, and that they unite in tendering him a unanimous expression of their respect and warm personal regard, and of their grateful sense of the earnestness with which he has labored to promote the best interests of the institution under his charge.

Resolved, That the Trustees of Columbia College heartily tender to their retiring President their best wishes for his future health and happiness, earnestly praying that he may be long spared to consult and labor with them for the promotion of the best interests of education and learning.

Resolved, That a copy of these preambles and resolutions, attested by the Chairman and Clerk of this Board, be communicated to President King.

The preambles and resolutions were adopted.

At a meeting of the Trustees held on the 18th of May, it was resolved to proceed to the election of a President of the College. A ballot having been duly taken, it was found that the Rev. FREDERICK A. P. BARNARD, S. T. D., LL. D., was elected. Dr. Barnard accepted the office in the following letter:—

WASHINGTON, D. C., May 20, '64.

William Betts, Esq.,

Clerk of the Board of Trustees of Columbia College,
New York City.

SIR,— Your letter of the 18th inst., officially informing me that I have been elected to the Presidency of Columbia College, has been received.

I accept the position with a deep sense of the honor done me by the Board in conferring it, and with the hope that by an earnest devotion to the important duties which it involves, I may be so happy as, in some degree, to promote the interests of the Institution, and, through it, of the cause of education in the country.

It will give me pleasure to confer with the Committee to which you allude.

I have the honor to be,

Very respectfully,

Your ob't serv't,

F. A. P. BARNARD.

On the 6th of June the Trustees adopted the following resolutions, presented by the Committee of Arrangements which had been previously appointed, consisting of the Rev. Benjamin I. Haight, S. T. D., William Betts, LL. D., Henry J. Anderson, M. D., Edward Jones, Esq., and the Rev. Morgan Dix, S. T. D.:

Ordered, That the President of the College be requested and authorized, at the close of the exercises on the ensuing Commencement-day, in the name and behalf of the Board of Trustees, to announce to the assembled College that the Reverend FREDERICK A. P. BARNARD, S. T. D., LL. D., has been duly elected President of Columbia College, and that he will enter upon the duties of his office from and after that hour; and that his formal inauguration will take place on the first day of the Fall Session, Monday, October 3d; and further,

Ordered, That the President then deliver into the hands of the President elect the keys of the College.

Ordered, That a copy of the foregoing order be given to the President, as the warrant of the action requested of him by the Board.

On Commencement-day, Wednesday, June 29th, at the close of the usual exercises, President King delivered the following

ADDRESS.

The hour has now come when I am to take my final leave, as President of the College, of the members of the Board of Trustees, of my long-time associates of the Faculty, and of you, my young friends, graduates and sub-graduates of the College.

After a service of fifteen years, and arrived at an age which demands relaxation and repose, the Trustees have been pleased to accept my resignation, and to appoint Rev. FREDERICK A. P. BARNARD my successor, whom it will be my pleasure to introduce to you here. I do not renounce associations and duties which have been so attractive to me without many feelings of regret,—a regret, however, softened by the memories I shall carry with me of the harmony and kindness of our past intercourse, and by the hope that I may, in the future, still hold a friendly place in your regard.

To you, gentlemen of the Board of Trustees, I render my thanks for the readiness and confidence with which you have supported me in the performance of my duties. Of you, my honored associates of the Faculty, I may now say what before might not have seemed quite allowable, that with such a corps of teachers there is little excuse for any shortcoming on the part of students, and less for any on the part of the President, whose duties their zeal and intelligence so much lighten. While of you, graduates and sub-graduates of the College, I may declare, as the result of all my experience,

that to no man, in my judgment, can be confided a duty more honorable, more self-rewarding, or more enviable, than that of assisting to form and to train such natures to knowledge, honor, and truth.

It is not, indeed, all sunshine. The path is not always plain and clear of difficulties; for here, as elsewhere, the frailties of our imperfect humanity play their part, just as well with teachers as with learners; but after all deductions, the relations of the President of this College to its pupils must be one of noble aspirations and inspirations. I say of this College, because of this I can judge, and because I regard our system, in which the refinements, the restraints, and the affections of home are so admirably combined with the instructions and discipline of this College, as affording to generous natures and well-ordered dispositions the best opportunities for good education.

To the class that now goes forth I bid a cordial God-speed! They are the last whom it will be my fortune to avouch to the world as well-deserving; and I may say, in all truth, that no one of the classes that have preceded them in my day was more deserving. In the battle of life upon which they are about to enter, they will quit themselves manfully and skilfully,—I hope, too, for each and all, successfully.

In separating myself from the College I shall not, and could not if I would, separate myself from interest in the welfare of those with whom I have there been associated; and I shall ever watch with some personal solicitude the progress of our alumni, and rejoice with the joy of friendship in whatever may honor them, and through them the generous institution from which they proceed. All hail, then, my young friends, and farewell!

And now, Sir, to you who are to succeed to the high office which I am about to leave, let me offer my most cordial congratulations. Familiar as you are with the duties of chief officer of a University, it would be at once presumptuous and unnecessary for me to advert in any manner to the nature of those duties. Success elsewhere is the sure guaranty of suc-

cess here. I may be permitted, however, to bear my testimony to the excellence of the material with which you will have to deal, and the expression of my conviction, that, with such acknowledged abilities, attainments, and experience as you will bring to the fashioning of this material, there can be only good results.

I therefore now resign my office into your hands, presenting to you the charter, statutes, and by-laws of the College, and in the name and by the authority of the Trustees I salute you as President of Columbia College, and as such I present you to the students and to this godly assembly.

REPLY OF THE REV. DR. BARNARD.

I accept, Mr. President, with unfeigned diffidence, the weighty responsibility, which, after a protracted period of honorable and successful service, you have chosen to lay aside, and which the Board of Trustees of Columbia College have seen fit to confide to me as your successor. Though by your long and faithful labors in the educational field you have fairly earned your title to repose, I feel assured that you will be followed in your retirement by the sincerest regrets of all the friends of Columbia College, and by their most fervent wishes and prayers for your continued welfare.

Suitably to fill the place which you have left vacant, I feel to be an undertaking at once difficult and delicate. Should the success attend me which your kindness has prompted you to predict, it will be principally, without doubt, because I shall enjoy the counsel and coöperation of the able and distinguished colleagues by whom you have been surrounded, as well as the support and encouragement of an enlightened Board of Trustees, who watch over the interests of this noble institution with a vigilance which never slumbers, and a zeal which never tires.

Nor do I count it as among the least, by any means, of the encouragements which the prospect before me presents, that I shall here meet a band of youthful aspirants after

knowledge, animated by elevated and generous sentiments, distinguished for gentlemanly demeanor, and imbued with the ennobling love of letters.

Under such circumstances, and favored by such advantages, I trust that Columbia College may continue to be, what she has ever hitherto been, a nursery of sound learning, and a school of thorough intellectual training. I trust that she may continue to foster, no less assiduously than heretofore, the love of that noble literature of antiquity, which has ever been esteemed the indispensable basis of finished scholarship; and that she may, at the same time, open wide the way to those rich treasures of science which the tireless spirit of modern investigation has wrung from nature by the direct interrogation of the glorious works of God. I trust that, while firmly holding fast that which is good of the accumulated learning of the past, she may show herself equally alive to the splendor of the intellectual triumphs which distinguish and illustrate the present; and may even take rank as a positive participant in those grand movements of progress by which the boundaries of human knowledge are extended, and the human race itself lifted to a higher level in the scale of being.

To secure the fulfilment of these anticipations, my most earnest efforts shall be unceasingly directed. And the known and well-tested abilities of the gentlemen who will be associated with me in my labors, furnish a secure guaranty against any possibility of failure which might be a consequence of my own conscious deficiencies.

Perhaps it may be permitted me here to add, that, in making this city my residence, I do not feel that I come altogether as a stranger. It was here that my active life began, and though since that day I have wandered far and tarried long, my heart has never wandered from the scenes made dear to it by early associations; and in returning at length to this my starting-point, I feel like one who has found a long-lost home.

But I trespass too far upon the patience of this assembly,

already tried by the protracted though interesting exercises of the day. Permit me, therefore, to conclude by offering to you, Mr. President, to the gentlemen of the Board of Trustees, to the gentlemen of the Faculty, to the alumni and undergraduates of the College, and to you, citizens of this great metropolis, whom I claim the privilege of henceforth addressing as my fellow-citizens, my most respectful salutations.

On Monday, October 3d, A. D. 1864, being the One Hundred and Tenth Year of the Foundation of Columbia College, which day had been appointed for the Inauguration of Dr. Barnard, as the Tenth President of the College,* the Trustees received the Faculties of Arts, Law, and Medicine, and the Professors of the School of Mines, together with the Alumni and the Invited Guests, in the Library, whence, at twelve o'clock, they went in procession to the Chapel, under the direction of Professor Peck, LL.D., and A. I. Van Duzer, A.M., Secretary of the Alumni Association, who had been requested by the Committee of Arrangements to act as Marshals, in the following

ORDER.

1. Chairman of the Board of Trustees and President Elect.
2. Ex-Presidents of Columbia College, and Emeritus Professor of the Evidences.
3. Trustees of the College, headed by the Committee of Arrangements.
4. Representatives of the United States, State, and City Governments.
5. Regents of the University of the State of New York.
6. Rector, Church Wardens, and Vestrymen of Trinity Church (as the first and munificent patrons of the College).

* See Note at the end of this narrative.

7. Chaplain of the College.
8. Faculty of Arts and Librarian.
9. Faculty of Medicine.
10. Faculty of Law.
11. Other Professors.
12. President and Officers of the Alumni Association.
13. Presidents of other Colleges.
14. Officers of other Colleges.
15. Alumni of Columbia College.
16. The Clergy.
17. Officers and Representatives of Literary, Scientific, and Art Associations.
18. Other Invited Guests.
19. Students.

In the Chapel, the Chairman of the Board of Trustees, with the President Elect, Ex-Presidents Moore and King, the Trustees, and the President of the Alumni Association, with a number of the senior Alumni and invited guests, took their places on the platform, in front of which were arranged the members of the several Faculties. After a Voluntary on the Organ, by William H. Walter, Esq., the Organist of the College, the Chaplain of the College, the Rev. Cornelius R. Duffie, A. M., said appropriate prayers from the Book of Common Prayer, read a Lesson from the Holy Scriptures, and offered the following Prayer, suitable to the occasion:—

PRAYER.

O Almighty God, "in whom we live and move and have our being," we desire that "all our works" may be "begun, continued, and ended in Thee," that so we may in all things "glorify Thy Holy Name." We therefore come before Thee to-day to offer our prayers unto Thee in behalf of this our College, at the commencement of a new era in its history,

and especially in behalf of him who now enters on his responsible duties as its newly appointed head.

O Fountain of all grace and blessing, do Thou bestow upon him the spirit of wisdom and of strength; of wisdom to devise, of strength to carry into good effect, whatever may be for the interest and prosperity of this Institution, and for the temporal and eternal benefit of the youth intrusted to its training. Do Thou bless and further all his endeavors for the promotion of the honor and usefulness of this College, as an instrument of "sound learning and Christian education." Lead all who are connected with it, whether as Trustees, Professors, or Students, to hearty coöperation with him in all plans and efforts for the enlargement of its powers for good; and especially to the Pupils give the disposition to yield all respect and subordination to the lawful authority of its head, and avail themselves to the utmost, by diligence, docility, and obedience, of the advantages here afforded them; that so, by the cherishing care of this our College, they may be fitted for usefulness in their generation here; and, having served Thee faithfully on earth, may be admitted to endless happiness hereafter, "in Thy light to see light," and to advance from knowledge to knowledge, and from glory to glory, through eternal ages. All which we ask through the merits and mediation of Jesus Christ, Thy Son, our Lord. *Amen.*

The President elect was then Inducted into Office by the Chairman of the Board of Trustees, the Hon. Hamilton Fish, LL.D., receiving from his hands the Keys of the College and the Charter, and took his seat in the President's Chair.

An Address to the President from the Professors in the several Faculties was then presented and read by Professor Nairne; and an Address from the Alumni, by Dr. Anderson, President of the Association.

The President then delivered his Inaugural Discourse.

The following Hymn, written for the occasion by William Betts, LL.D., a member of the Class of 1820, was then sung with great spirit by the congregation :—

HYMN.

Spirit of the upper sky !
Thou, whose all-pervading eye
Pierceth through Infinity,
Look upon our work to-day ;
Let thy form, celestial Dove,
Hover o'er us from above,
Filling every heart with love,
While we lowly bend and pray.

Grant us purity of soul
Evil passions to control,
Let thy bright effulgence roll
Light on this thy servant's heart ;
Grant him grace his work to do,
Grant him to be just and true,
With earth's knowledge e'er in view,
Heavenly wisdom to impart.

The Exercises in the Chapel were closed by the Benediction, pronounced by the Reverend President.

Subsequently, the President and Trustees received the Professors, the Alumni, and the invited guests at the President's House.

NOTE.

The following is a List of the Presidents of Columbia College from its foundation :—

1. Samuel Johnson, S. T. D., LL. D., A. D. 1754 to 1763.
Resigned.

2. Myles Cooper, S. T. D., LL. D., A. D. 1763 to 1775.
Abdicated.

A. D. 1776 to 1784. College closed.

A. D. 1784 to 1787. No President.

3. William Samuel Johnson, LL. D., A. D. 1787 to 1800.
Resigned.

4. Charles Wharton, S. T. D., A. D. 1801 to 1801. Resigned.

5. Benjamin Moore, S. T. D., A. D. 1801 to 1811. Resigned.

6. William Harris, S. T. D., A. D. 1811 to 1829. Died.

7. William Alexander Duer, LL. D., A. D. 1829 to 1842.
Resigned.

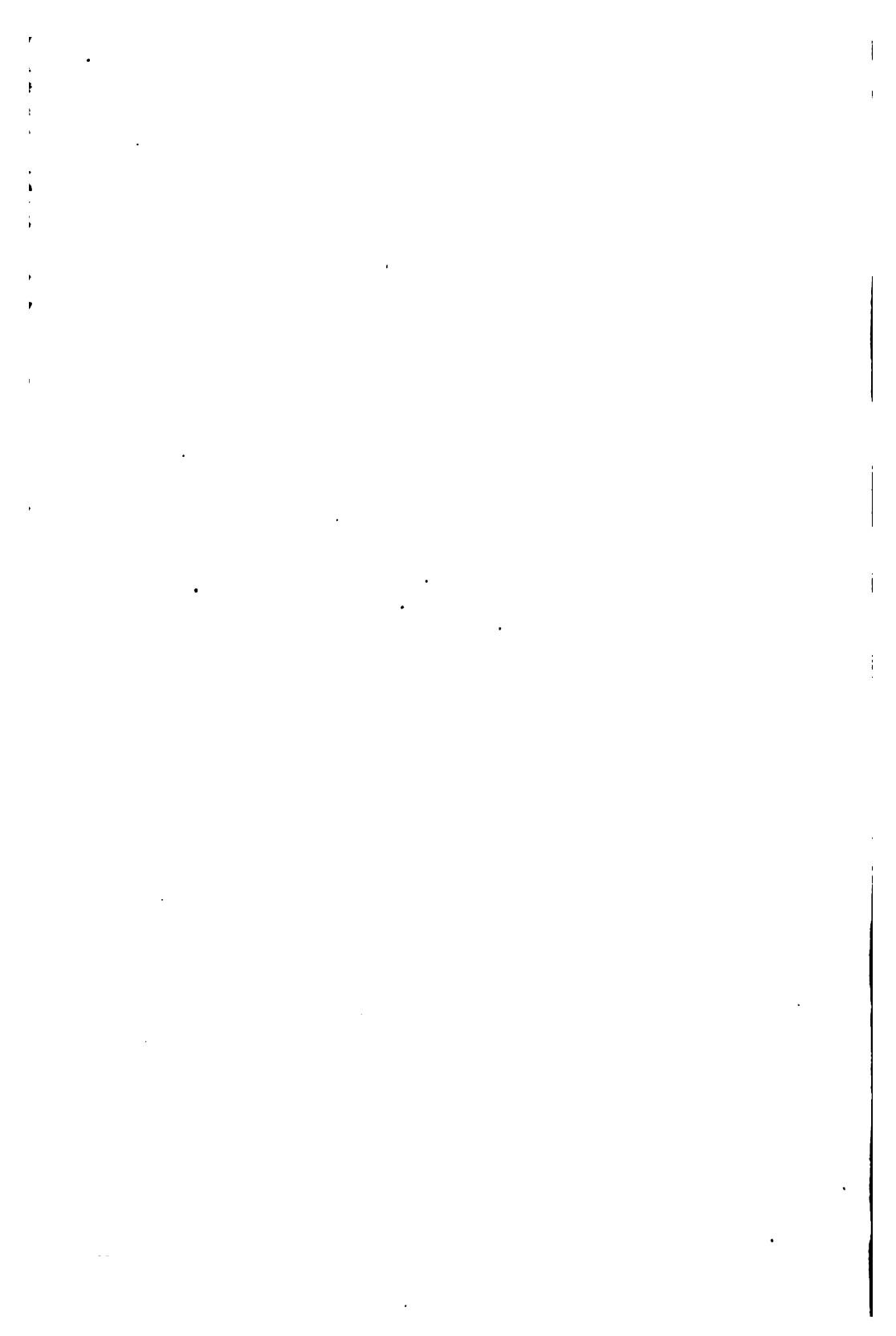
8. Nathaniel F. Moore, LL. D., A. D. 1842 to 1849. Resigned.

9. Charles King, LL. D., A. D. 1849 to 1864. Resigned.

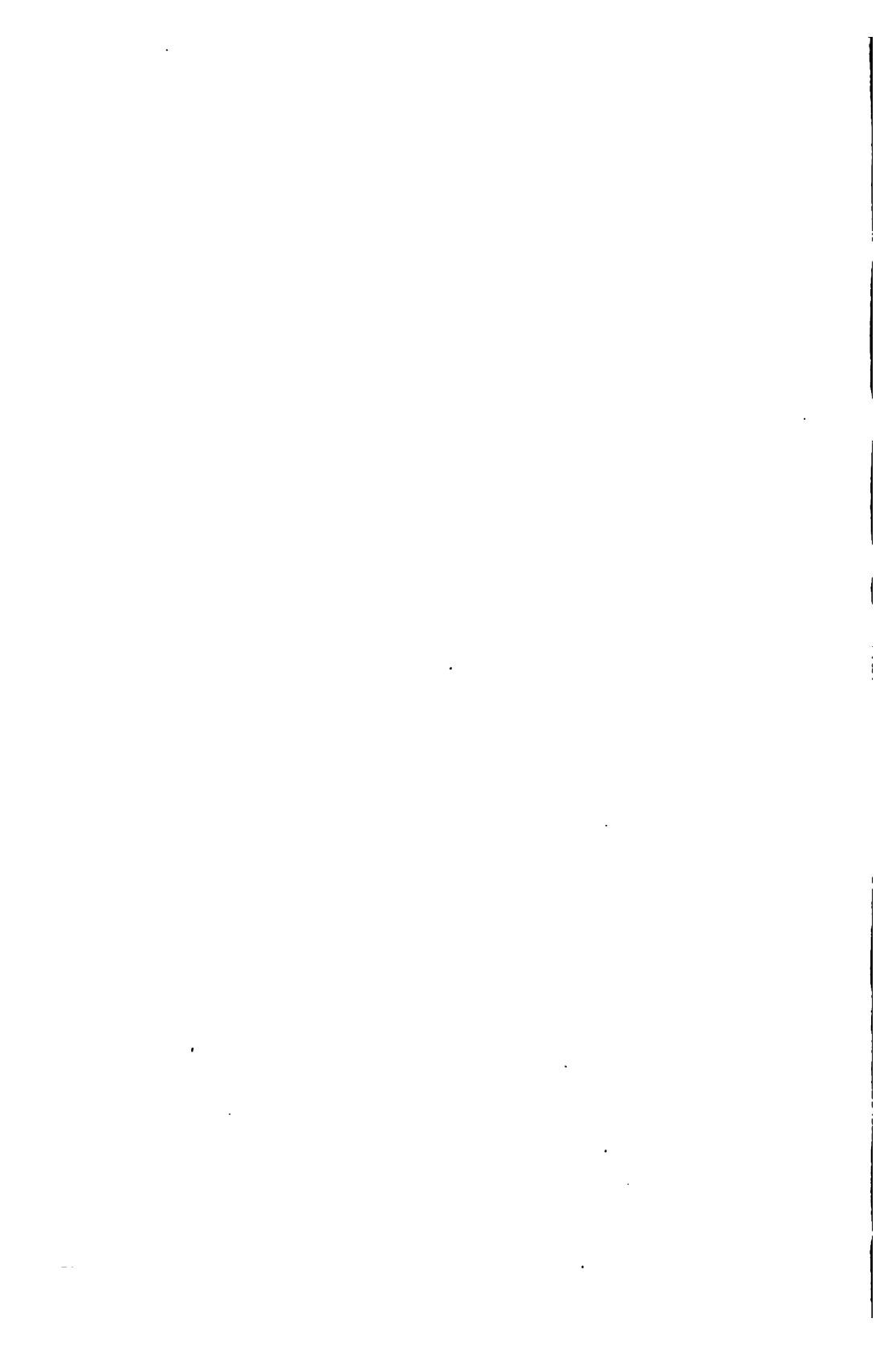
10. Frederick A. P. Barnard, S. T. D., LL. D., A. D. 1864.*

* From A. D. 1811 to 1816, the Rev. John M. Mason,
S.T. D., was Provost.

* Dr. Barnard was graduated at Yale College, in the class of 1828, and was a Tutor in that College, A. D. 1830-31. He was elected a Professor in the University of Alabama, in 1837, where he remained seventeen years, filling successively the chairs of Mathematics and Natural Philosophy, and of Chemistry and Natural History. In 1854 he was chosen Professor of Mathematics and Natural Philosophy in the University of Mississippi, of which Institution he became the President in 1856 and the Chancellor in 1861, filling also the chair of Physics and Astronomy. The degree of LL. D. was conferred upon him by Yale College, and that of S. T. D. by the University of Mississippi.



A ^ ADDRESS
OF
THE HON. HAMILTON FISH, LL.D.,
CHAIRMAN OF THE BOARD OF TRUSTEES,
AND
REPLY
OF
PRESIDENT BARNARD.



THE CHAIRMAN'S ADDRESS.

DOCTOR BARNARD:— The corporate authorities of this ancient institution, by a deliberate vote, and with a cordial unanimity, have called you to the Presidency of the College, made vacant by the resignation of its late amiable and accomplished occupant. We are assembled for the purpose of completing your induction into office, by the delivery to you of the keys of the College, and a copy of its charter, as the symbols of the office committed to you.

In the discharge of your duties, you will have as your assistants a Faculty well tried, and of approved ability, learning, and success in the several departments of science and of arts. You will have the cordial support and sympathy of the corporate authorities of the College, in every measure tending to promote its interests, and the cause of education and of learning.

We commit to your care a generous band of ingenuous youths,— objects of interest, affection, and pride in the present, of deep and earnest hope in the future,— preparing for the stern contest of life, and soon to become busy actors in the world's great drama. We bespeak for them, collectively and individually, your tender care, your stern watchfulness, your affection. Train, instruct, incite, restrain them,—

Viamque insiste domandi,
Dum faciles animi juvenum, dum mobilis ætas.

Our College is liberally endowed, has lands, has wealth;

but these young gentlemen she esteems her most precious treasures.

While we are full of hope and of affection for those now committed to your care, we cherish a just pride in those who have preceded them, and have heretofore gone forth from the training and the discipline of this institution.

The presence with us, this day, of some of these, and the still active engagements of others, restrain words of praise which I should be most happy to express. But I trust that it will be no invidious distinction to mention the names of some whose talents and attainments have been devoted to the service of the College.

Among your associates sits, on your right, the Venerable and Reverend M'VICKAR, eminent in piety, and of varied and profound learning, who has devoted nearly half a century of efficient labor to the instruction of the College.

Upon your left is ANTHON, who for nearly an equal period of time has given reputation to the College, and has thrown attractions around the classic literature and learning of which he is the accomplished master.

There, too, on either side, are DRISSLER and VAN AMRINGE, younger in years and in service, but bright and shining lights, brilliant in accomplishments, profound in attainments.

No longer in the academic board, but still in the service of the College, is ANDERSON, who filled, with consummate ability and grace, the chair of mathematics. RENWICK rests from his labors, but his memory is fresh in these halls, and he will ever be named when the College calls the roll of her distinguished sons.

And there is the beloved and venerable man * whose presence graces this occasion, the elder of your surviving predecessors in the Presidency, — full of years, full of learning, and full of affections and of sympathies, which are returned, in full

* NATHANIEL F. MOORE, LL. D., for many years Professor of the Greek and Latin languages and literature, and subsequently President of the College.

measure and overflowing, by all who were his pupils, by all who appreciate learning and accomplishment, virtue and dignity. More than fourscore years have failed to impair his joyousness, to affect his powers, or to diminish his interest in letters and in science, — “*discenti assidue multa, senecta venit.*”

Passing to the ante-Revolutionary period, when our Institution was known as “King’s College,” and was but recently established, and her sons were few, the names of Jay, Livingston, Morris, Benson, Hamilton, Van Cortlandt, Troup, Rutgers, Willett, Duane, attest the justness of our pride, and the prominence of the sons of our College, both in council and in the field, and their influence in moulding and in controlling the events that resulted in American Independence, and in the establishment of the government under which thirteen feeble Colonies grew to be a great and powerful nation.

The genius of ALEXANDER HAMILTON, seen and felt everywhere in the early history of the Republic, is impressed upon every page of the Federal Constitution.

The graceful and accomplished pen of GOVERNEUR MORRIS reduced to form the accepted principles and the conclusions of the Convention which framed the Constitution, and gave them the language and the diction in which that sacred instrument challenges our admiration, our gratitude, and our confidence.

Truly and beautifully was it said by one who could appreciate truth and purity and intellectual greatness, that “when the ermine of justice fell upon the shoulders of JOHN JAY, it touched nothing less pure than itself.”

JOHN JAY, too, was an alumnus of this College, and was an associate with HAMILTON in the authorship of “The Federalist,” that powerful, persuasive publication, whose logic and eloquence subdued passion, overcame prejudice, and secured to grateful millions the blessings of the ark of our political covenant.

Our College, claiming that these three of her sons breathed its genius and life into the Constitution, gave it the style

that graces it, and contributed the clearest and most effective arguments for its adoption, is thus bound, beyond all others, by a triple tie, to its support and maintenance. It was the boast of the father of Hannibal, (referring to his three sons,) that he kept three lions to destroy his enemy. It is our boast that we raised three sons to give life and genius to a nation. And as the Carthaginian swore his son, at an early age, to eternal enmity to his country's foes, so let the teachings of our children, from their earliest childhood, be eternal war against all who would lay rude or violent hands upon the sacred instrument which holds together the Union committed to our keeping by honored fathers : a Union full of happiness in the past, and yet full of hope in the future, notwithstanding parricidal hands raised in the vain hope of destroying that which rests upon principles that God himself has ordained to be eternal and immutable !

True to her history, let Columbia College send forth none other than sons trained to the capacity and filled with the resolution to maintain their fathers' wish ; yea, even to inscribe more plainly the landmarks of right, to drive deeper the stakes of truth, to implant more firmly the principles of heaven-born justice, and to place upon a loftier eminence, and upon a broader and stronger foundation, the standard of love to God and good-will among men, of God's universal supremacy and man's universal freedom and political equality.

Such is the duty and the high privilege of our colleges and schools of learning. Theirs it is so to teach the great truths of morality and of revelation, and to blend and unite letters and science in such proportions and harmony, as to constitute a full panoply, stronger than that of the fabled goddess ; and thus arming their sons, to send forth men prepared wisely and ably to assume their parts in the direction and the responsibilities of every phase of man's varied life.

For this purpose, you have your departments of letters and arts, with their refining tendencies, their culture, their discipline, their teachings, their accumulation of the wisdom and experience of the past, their subtle logic, and abstruse meta-

physics, to educate and prepare the youthful warrior entering upon the stern battle of life ; while science will furnish the armory and storehouse whence to draw the material needed for the strife. And to this end science penetrates the lowest depths of the planet which we inhabit, develops its contents, and displays its composition ; divides and analyzes the impalpable and invisible air, and the minutest ray of the heavenly orbs ; is not content to follow "the stars in their course," but anticipates and foretells with awful accuracy their complicated movements, and explores the mysterious relations of those vast and innumerable masses and influences which, moving and operating through illimitable space, acting, reacting, and counteracting, with mutual and diversified relations and compensations, under laws which Omniscience has imposed, exhibit the perfection of harmony pervading the infinity of creation. And far above and beyond the benefits to man's material interests which science thus develops, stands out, in letters of living light, its refutation of the hazy and misty doubts which halting and superficial skepticism would throw upon revelation.

Thus Science becomes the handmaid and the companion of Religion, and confirms the faithful Christian in his reliance upon the revelation he has received, and in his hopes of the promises held out to the believer.

To you, Sir, who have travelled widely and profitably through the various fields of letters and of arts, who have explored the most intricate paths of science, who are vested with a sacred commission to preach and to teach the gospel of Christ, is now committed the care and the supervision of this College.

To one who has devoted so many years and so much of learning and of talent to the cause of education, it were superfluous to enlarge upon the dignity and the importance of the training of youth up to the responsibilities of an age already full of events, and pregnant with consequences of portentous magnitude. It were superfluous to suggest how

much of the domestic happiness of unnumbered homes, how many fortunes of untold families, how much, even, of the future of empire hangs upon the threads which, as a skilful educationist, you are to work, and to bind together.

It remains for me, Sir, in the name and by the authority of the Trustees of Columbia College, to deliver to you these keys, and copy of the Charter, which I now present to you as the symbols of your office; and in their name, and by their authority, I formally proclaim you to be the President of Columbia College.

As such I present you to the Faculty of the College; to the Alumni; to the distinguished company who honor the occasion with their presence.

To you, as such, I present and commend these young gentlemen, our students; whose respect, affection, submission, and obedience I earnestly bespeak for the President of the College.

PRESIDENT BARNARD:—The cares and the duties of a responsible office now are yours. May you be sustained and supported in their efficient discharge.

THE PRESIDENT'S REPLY.

It is with the liveliest sensibility that I accept, Mr. Chairman, these symbols of the distinguished trust which the enlightened body you represent, the legal guardians of this noble and venerable seminary of learning, have chosen to commit to my hands. I know too well the magnitude of the task before me, to enter upon it without a profound sense of my dependence for support and guidance, and all that can make success a possibility, upon the Divine Fountain of all strength and all wisdom. It is only in humble reliance upon the continuance of that gracious aid which has sustained me heretofore under responsibilities similarly grave, that I find encouragement to hope that my strength may here also be made equal to my day.

There is something in the chain of incidents which has placed me in my present situation which seems to me remarkably to disclose the directing hand of Providence. A quarter of a century ago, it was my privilege and my pride to count myself a citizen of this great metropolis. Suddenly, and almost unexpectedly to myself, I was called to lend such aid as I might be able to contribute to advance the cause of higher education in the great Southwest. Buoyant with the hopes and animated by the enthusiasm natural to youth, I responded to the call. I found an inviting field. I encountered large-hearted and enlightened fellow-laborers. I was cheered by the encouraging voices of the intelligent and the influential throughout the community by which I was surrounded. My proper life's work seemed to lie before me ;

and where my work lay, there I fixed my home. Of the more than twenty years that followed, their labors and their trials, their discouragements and their successes, it is unnecessary here to speak. It is sufficient to say, that there came at length an hour which seemed freighted with the fruition of hopes long and ardently cherished, and with the reward of toils patiently and willingly endured; and that in the same hour the arm of the beneficent government which had shielded me there as here — a government so beneficent and so mild as to be felt only in the protection it afforded and the blessings it shed around — was suddenly paralyzed. I discovered that the labor of my life had been practically thrown away. I discovered that my home was no longer my home, since rebellion, triumphant for the moment, declared that it was no longer my country.

O you, whose happiness it has been to live where the glorious emblem of our national authority has never ceased to float upon the breeze! it is not for you to know the anguish that has wrung the hearts of fervent lovers of their country, compelled to see that sacred ensign trampled in the dust. Nor is it for you to know the bitterness of that stern necessity which has forced such hearts to tear themselves from places made dear by the remembrance of many peaceful and happy years, — from all the traces they may have left of the earnest labors of a life, — from communities with whose interests their own have long been blended, and from friends whose many kindnesses have made them dearer than kindred, — in order to seek a sky beneath which patriotism shall not be crime, to find an atmosphere where loyalty may be free to breathe.

It was thus, that, from the scene of my ruined projects, my frustrated labors, and my disappointed hopes, I turned away, animated but by one purpose, possessed by but one longing, — to find a spot over which the flag of my country might still be waving. I found it at length, and with it the security and the tranquillity of mind to which I had long been a stranger. But, more than this, I found friends, encourage-

ment, honorable distinctions. Chief among these last, the highest academic distinction to which any ambition could aspire, I esteem that which I have received at your hands to-day. And in expressing my profound sense of this distinguished honor, I cannot but be struck with the remarkable fact, that the spot to which by your invitation I return after an absence so protracted, these buildings and these grounds which you commit to my care, are the very same which formed my residence — though then devoted to purposes altogether different — when, a quarter of a century ago, I left this city for my distant Southern home.

You have mentioned, Sir, in terms of beautiful and deserved eulogy, the illustrious names of those early graduates of this college, whose labors so largely contributed to the formation, and to the adoption by the people, of the great charter under which our country, for nearly three quarters of a century, continued to enjoy a happiness so unbroken and a prosperity so unparalleled. The interesting and memorable facts which you have recalled to our minds, impose upon every one, who shall ever in any capacity be connected with Columbia College, a peculiar obligation to maintain and defend the priceless heritage which they did so much to secure for us.

I accept the obligation in its fullest extent ; but for myself I needed no new stimulus to this sacred duty. Next to the Bible in my heart, I cherish the love of that venerated instrument in which is embodied the living principle of our national unity ; and for one I never will consent to hold any parley or to enter into any compromise with such as flout its authority, until its insulted majesty is fully vindicated, and its unquestioned supremacy reestablished and acknowledged over every foot of territory which its protection has ever reached, over every smallest spot which its benign influence has ever made happy.

Permit me, Sir, in conclusion, to thank you for the kind language in which you have addressed me, and to express my especial gratification in having received my office at the hands

of one who has been himself so often and so worthily the object of the highest honors his fellow-citizens could bestow.*

* The Hon. Hamilton Fish was graduated at Columbia College in the class of 1827. He was a Representative from the City of New York in the Congress of the United States from A. D. 1843 to A. D. 1845. He was elected, successively, Lieutenant-Governor and Governor of the State New York, which offices he filled from A. D. 1847 to A. D. 1851. He was a member of the United States Senate, as one of the Senators from the State of New York, A. D. 1851 to A. D. 1857. He received the degree of LL. D., from Columbia College, in A. D. 1850, and was chosen Chairman of the Board of Trustees of the College in A. D. 1859.

ADDRESSES

FROM

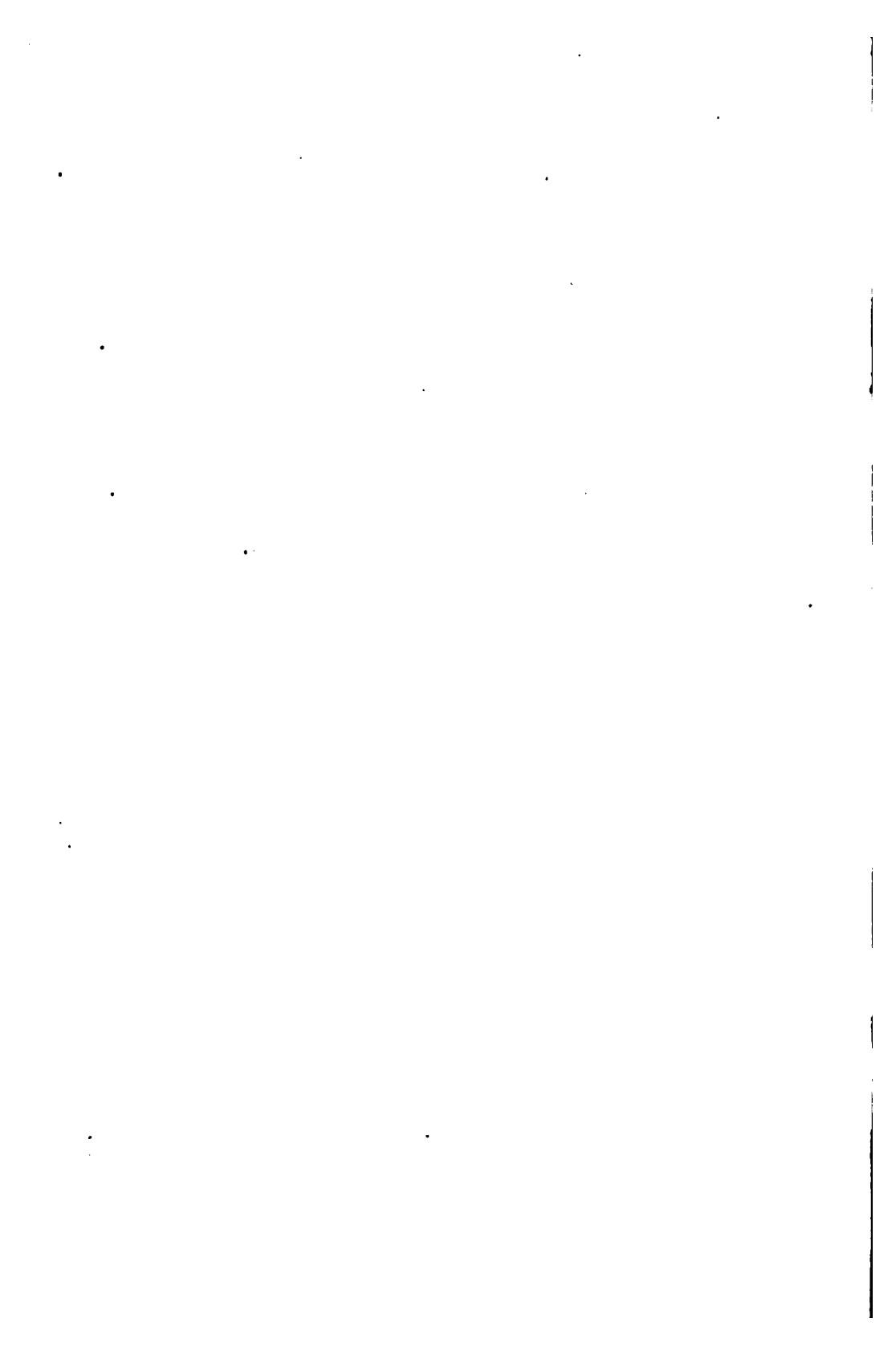
THE SEVERAL FACULTIES BY PROFESSOR NAIRNE,

AND FROM THE

ALUMNI BY DR. ANDERSON,

AND

REPLY OF PRESIDENT BARNARD.



ADDRESS FROM THE FACULTIES.

MR. PRESIDENT:—In the name of the Faculties of Columbia College, I bid you welcome to our presidential chair.

Our feelings at this time, Sir, may be supposed to resemble those of the peers in a monarchy at the accession of a new sovereign. They are feelings of anxiety and hope; for the comfort of our situation and the prosperity of our school depend not a little on the disposition and capacity of our presiding officer.

Accustomed as we have been to the kindness, affability, and urbanity of your venerable predecessor, we have naturally desired to find the same qualities in you; and naturally too have we made inquiries as to the probability of our desire being fulfilled.

Before we had the honor of your personal acquaintance, our questionings both of public and of private opinion had gone far to satisfy our hopes; and our subsequent intercourse with you, slight though it has yet been, assures us that our expectations will not be disappointed.

Your success elsewhere in academic government promises equal success in the city of New York; and your experience may suggest improvements which will add to the already distinguished reputation of Columbia College.

Your well-known scientific acquirements, and your accomplishments in elegant literature, as well as the knowledge of philosophy implied in a theological education, qualify you to appreciate good teaching in all our departments, and to encourage us by an intelligent approbation of our labors.

You will be, in some sort, our representative at the Board of Trustees ; and in that capacity you will possess our entire confidence. Knowing by trial the toils and difficulties of the educator's office, you will be able to give opinions of greater worth and weight than they would be if you had never been by profession a teacher.

We promise you our hearty coöperation in all matters pertaining to instruction and discipline in the College. From week to week, you and we will take counsel together at the college-board ; and to our class-rooms, where, in a kind of "*State sovereignty*," we individually preside, we hope you will often resort, that you may cheer us by your countenance and animate our students, as soldiers are animated when they do duty under the eye of their commander-in-chief.

It delights us to understand that we shall have frequent opportunities of knowing you socially as well as professionally. The Professors of Columbia College, dwelling apart in a great city, find it more difficult to cultivate friendship with each other than if they belonged to a rural institution ; but we trust that your leading the way toward the establishment of a closer social intimacy among us, may influence those of us who can make it convenient, to follow your excellent example.

Once more, Sir, I bid you welcome ; and I am sure that I express the heart's desire of all my colleagues, as it is my own, when I pray that your presidency over our beloved college may be long, happy, prosperous, and honorable.

ADDRESS FROM THE ALUMNI.

MR. PRESIDENT : — It is but a holiday's space since the sons of Old Columbia took occasion to do honor to her venerated chief, when, closing a long energy nobly devoted to her service, he passed his work gracefully over to the hands of his worthy successor.

These sons then felt a sorrow which you were the first to comprehend and respect. They now feel a joy which your generous predecessor will be equally prompt to approve. Our regrets at that time abated nothing of your rank in our esteem, and what we now have to offer takes as certainly nothing from his. Reassured by this belief, Alma Mater (ever joyful in the joy of her sons) is unusually radiant to-day, and tenders you, fresh from her heart, a triple salutation, as a grant of her prerogative, a measure of her trust, and a token of her honest delight. Your accession has just now been emphatically greeted by the administrators of her powers, and again by the learned expositors of her thought. In her wise liberality she has chosen that the members of these bodies may or not be her own flesh and blood ; yet their felicitations have been as loyal as a son's. Now we, her issue, sprung of her very loins and nurtured at her breast, must not be outdone in this encounter.

And first we rejoice because we recognize in you, what we ever found in him you replace, (that surest title to all confidence,) the old fidelity, the "*prisca fides*," — the hard-tried but proved allegiance to time-honored Truth. While you will not be unregardful of what art can do for beauty, science for use, and letters for both, you will yet maintain in full

supremacy that hallowed immemorial traditionary bond — honor everywhere to the lawful superior, and reverence to rightful authority. This bond and this supremacy, (without which all else is but a treacherous illusion,) — yes, you will maintain it, — *suaviter*, that it may be loved, *fortiter*, that it may be felt and obeyed.

You will justly appreciate the claims of modern knowledge ; but you will not let it be believed that she has come with any mission to contest, much less to curtail, our unabridged Inheritance of Faith. Holding high in your esteem the grand capacities and noble disciplines by which wonders are varied, labors relieved, enjoyments multiplied, and liberties enlarged, you will not allow the best or boldest of them all to outrank that Wisdom Increase not made nor unbegotten, to whose God-given Jurisdiction all the philosophies and the philanthropies, which ever amused or beguiled or bewildered their human day and generation, will yet be brought to submit. We rejoice, too, because we know from your antecedents, that, revering as you do all that age has rendered venerable, you can sympathize most genially with what is trustful or magnanimous in youth, so that even in its giddier aberrations you will see nothing worse than a child-like vivacity most easily subdued by a fatherly word. Your record is our warrant that your government will be paternal, with the mildness that takes from justice the semblance of severity, the steadiness that lends dignity and safety to indulgence, and the rare discretion that wins from the most wilful a generous obedience to a gentle request.

For these and other reasons — believing as we do that you will always cherish, as the consecrated objects of your care, Alma and her children, as well those who like ourselves have been lately or long since sent forward to the front, as those who, now or soon, may come trooping to her side — the Alumni of Columbia College join cordially in the general welcome, and bid you, Mr. President, and your now happily inaugurated rule, a hearty *Vivat* and a brave God-speed !

THE PRESIDENT'S REPLY TO THE FACULTIES AND THE ALUMNI.

I KNOW no situation in life which is attended with a more oppressive weight of anxiety, than that of him who undertakes, with a conscientious sense of duty, to administer the affairs of a great educational institution. In most situations, the influence for good or for ill, which can be exerted by an individual upon the world around him, or the generations which are to come after him, is limited to the consequences of his own immediate acts. But the educator of youth, if faithful to his task, moulds largely the opinions and shapes the principles of others, and so, through the acts of many, is felt through a circle which is always large and is ever widening. He who, without a sense of misgiving, can assume a position of so difficult responsibility, must be sustained not only by an earnest zeal and a consciousness of good intent, but by a confidence in his own wisdom and strength which few have a right to entertain. Nor if, to one who occupies a position like that in which I find myself to-day, the future brings solicitude, will he be likely to find relief in turning his thoughts backward to the past; for in the honorable history and noble reputation of the institution of which he is bold enough to assume the direction, he will behold the difficult measure by which his own work is to be tried; and in the men who have created that history and achieved that reputation, he will see the standard by which he is himself to be judged. This consideration comes home to me on this occasion with singular force. For while I do not enter upon

the trust confided to me here without some experimental acquaintance with its nature elsewhere acquired, it is new to me to feel the burden of a responsibility which extends to the past as well as to the future. Hitherto I have been a pioneer in the great educational army, laboring to clear new ways through the wilderness of ignorance, seeking to kindle new beacon-lights upon heights in advance of the grand march of intellectual culture across the continent. I have been endeavoring to build upon new foundations, and not to carry on toward completion an edifice begun by others. Had I accomplished anything, had Providence permitted me to accomplish anything worthy of remembrance, the record would have been but the beginning of a history, and not its continuation. Had I finally failed, the failure would have been my own, and would have brought to ruin no goodly results of the labors of better men. It is not so here. My distinguished predecessors, — two of whom, by honoring with their presence the ceremonial of to-day, evince the undecaying interest they feel in the institution which owes them so much, — aided by the zealous coöperation of many learned colleagues and counsellors, have made of Columbia College an object of so just honor, veneration, and love, that any detriment which might befall her in the hands of a successor would bring to thousands of hearts an acute sense of a great public calamity. All this I feel with a depth which will greatly intensify the earnestness with which I enter upon the discharge of my duties here.

To you, Sir, who on behalf of the Faculties of the College have tendered me so cordial a welcome, and to the body in whose name you have spoken, permit me to return the sincere thanks of a grateful heart for your generous words. Your language is to me a pledge that the harmony which, wherever men are associated for a common object, is the first essential to happiness as well as to success, shall ever preside over our united counsels and be illustrated in our common acts. And though there are few respects in which I can hope adequately to fill the place left vacant at your Board by my able and

excellent predecessor, I can at least promise that no conscious act of mine shall ever disturb the harmony which his genial influence has diffused among you. With some of you, gentlemen, it is my happiness to have been already acquainted. Some, too, have been long known to me by the far-reaching reputation which has rewarded their successful labors in the field of letters and science. There are some, indeed, whom not to know would argue a singular ignorance of the scholarship and the literature of the country. To be associated with such men I feel to be a distinguished honor. If through that association I might attain to enjoy their friendship, I should esteem it as more than an honor, — it would be a happiness.

You have kindly alluded to my past experience. If my experience has taught me any lesson it is this: that while the necessities of organization require that in every institution there should be an executive head, whatever of efficiency an educational institution may exhibit, whatever of distinction it may attain, will depend upon the learning, the ability, and the zeal of those who direct its several departments of instruction. To yourselves, gentlemen, Columbia College owes, in great part, her present honorable celebrity. To yourselves, should it continue, she will owe its perpetuation. And so long as the roll of her Faculty shall embrace the names of scholars and men of science, such as those who fill and adorn her several chairs to-day, so long she will maintain her present proud position among the foremost of American colleges.

Entertaining sentiments like these, I shall be the last to question the legitimate exercise of that collegiate "State sovereignty" to which you have so pleasantly alluded. In his own proper province, each officer of a college should enjoy that freedom to which his superior acquaintance with all that relates to his peculiar domain entitles him. There is the less danger in the concession, inasmuch as the limits of this sovereignty are so clearly defined that the harmony of academic rule is not likely to be disturbed by resort to so violent a measure as secession.

To your suggestion of the advantages which may arise from freedom of social intercourse among those whose official duties bring them daily here into contact, I respond with all my heart. I embrace in this response the instructed no less than the instructors. If there be moments when the artificial relations created by academic law or usage may be forgotten, and student and teacher may meet upon the common ground of social equality, the consequences cannot but be, and my experience proves that it always will be, to foster sentiments of mutual kindness and mutual respect, and to promote the harmony and happiness of the whole academic circle.

If I am cheered by the greeting which I receive from those who are to be my associates and fellow-laborers, I am flattered and gratified by that which meets me from you, gentlemen of the Alumni. The Alumni of a college constitute at all times its most fitting representatives. Their interest in the institution in which their growing intellects were nurtured is probably deeper than it was even when they were daily gathered within its venerated walls, and were still the objects of its fostering care. On the other hand, the institution looks on them with an honorable pride, as the fruits of her accomplished labors, and the visible illustrations of her usefulness. Through them, in the various avocations of life which they fulfil and adorn, the beneficent influence of the college diffuses itself throughout all the ramifications of society, and is felt in giving elevation to the tone of public sentiment, and disseminating enlarged and liberal views of public policy.

You, gentlemen, have much reason to be proud when you recall the many honored names which lend their lustre to the roll of your fraternity. There is no position of usefulness which Columbia's sons have not filled; there is no post of honor which their virtues and their merits have not made more honorable. Their eloquence has shed brilliancy over the forum, their learning has added dignity to the bench, admiring throngs have listened to their words of wisdom in the senate chamber, and the persuasions of the pulpit have been made more resistless by the charm of their piety. In the

infancy of our republic, as you have been already happily reminded, Columbia's sons were among the foremost of the statesmen who, by their identification with the origin and early history of our glorious national constitution, made themselves forever immortal ; and in the latest troubled days, when, over a portion of our land, that sacred charter of liberty is trampled in the dust, we find Columbia's sons still among the foremost to avenge the insult offered to the noble work of their fathers, and, if need be, to lay down their lives in its defence. What encouragement, what inspiration, may not the contemplation of such animating examples furnish to the ardent and generous youth who are pressing forward to inscribe their names upon the same honorable list.

You have been pleased, Sir, to allude to those principles according to which, in my administration of the affairs of this institution, you suppose that I may be guided. I am gratified to recognize in your language sentiments which have long been mine. None appreciate more fully than I do the necessity of law ; or the value, as an element of character in young or old, of a reverence for constituted authority. But, if possible, I would instil the principle of obedience, by ever associating it with the sense of right. In most instances, indeed, in which I have known authority to come into conflict with the spirit of insubordination, I have found the most efficacious appeal which can be addressed to an ingenuous youth to be, Examine the case for yourself, and tell me honestly the decision of your own conscience. Law, it is true, must be obeyed ; but in order that obedience may be what it should be, a part of a beneficial moral culture, it should be grounded in a conviction that law is not only necessary, but is also right. We should be able to feel as well as, in the language of Hooker, to say, "Of law there can be no less acknowledged than that her seat is the bosom of God, and her voice is the harmony of the world."

You have spoken of my sympathy with what is trustful and magnanimous in youth. In this you have touched the key to whatever of success may have attended me as a col-

lege governor. I love young men. Seldom have I found them otherwise than frank, truthful, and generous. Their very faults are often but the exaggeration of impulses which themselves are noble. It is rare indeed that they evince a deliberate purpose of wrong. In most instances gently to point out the error is sufficient to secure its correction.

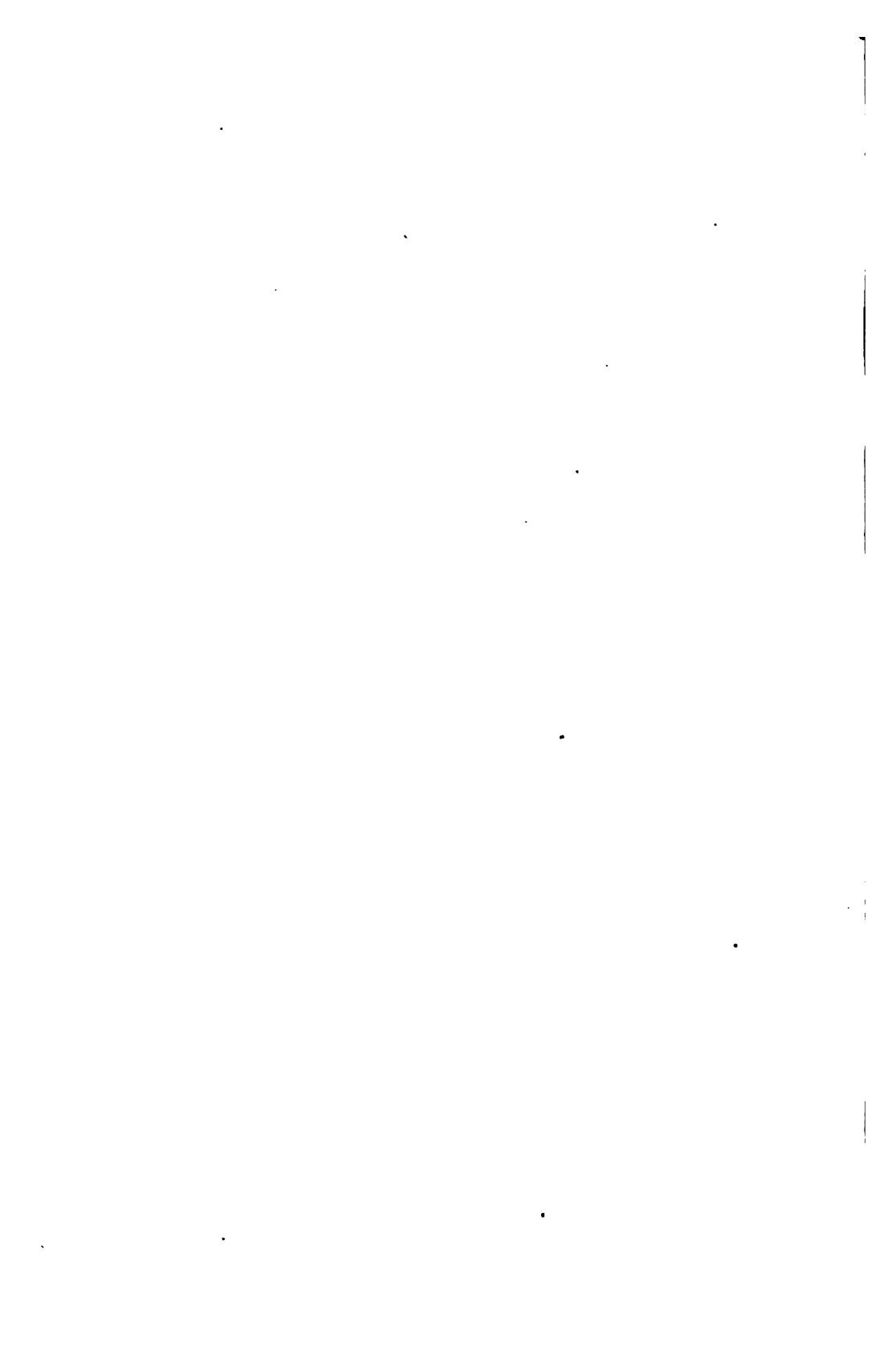
I am cheered by the sunny hopefulness of the young. I am warmed by their ardor. I give them spontaneously my confidence, and look for theirs in return. It has not often been my misfortune to meet with disappointment. Upon this basis, college government has succeeded. I cannot doubt that it will succeed again.

You are right, Sir, in attributing to me a high appreciation of the value of modern science. We naturally value that which has largely and continuously occupied our thoughts; and my past professional pursuits have conspired with my natural tastes to foster the sentiment to which you refer. It seems to me, indeed, that no one can be an indifferent spectator of a scientific progress which is daily making so vast contributions to the increase of human comfort, and to the enlargement of the wealth of nations. Yet I thank you for doing me the justice to believe that I would allow no science or knowledge of merely human origin to take precedence, for a moment, of that heavenly wisdom whose office is, not exclusively to enlighten the understanding, but, rather, to purify the heart.

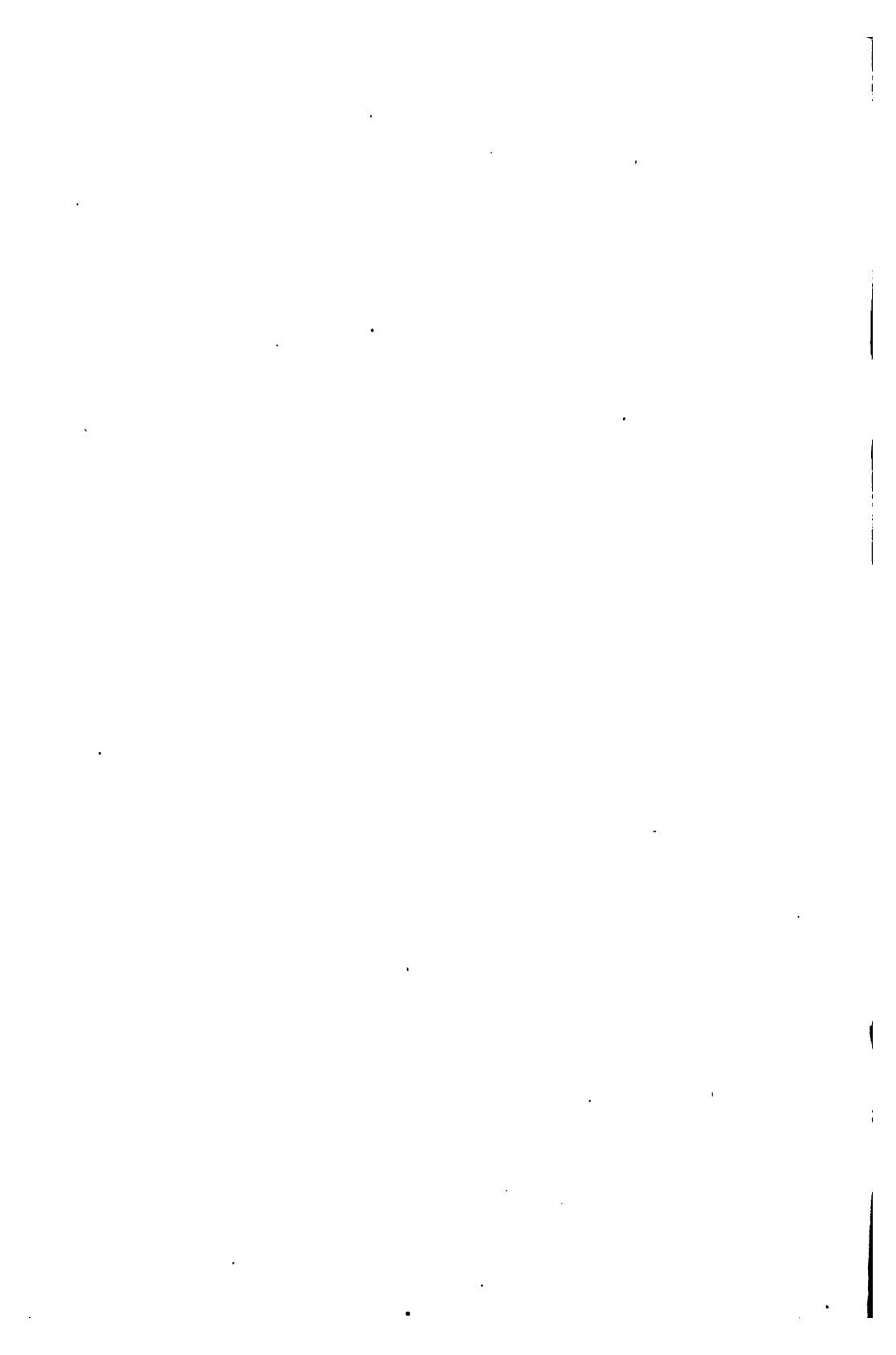
I think I do not misinterpret you when I presume, that, in relation to this subject, your words have been chosen with reference to the imaginary conflict asserted by some to exist between the teachings of the sacred oracles of our religion and certain of the conclusions of modern scientific research. I do not recognize such a conflict, nor admit its possibility. All true science is to me but a form of revelation from the one great Author of all truth. I cannot conceive that He in whom there is no variableness nor shadow of turning, will ever be found to contradict in His works the declarations which He has made us in His written Word. And what-

ever may be the amount or the seeming value of that truth which has rewarded, by its discovery, the faithful labors of modern scientific investigators, or whatever the grandeur of the multiplied achievements of human intellect in every department of inquiry, I esteem all these things combined as lighter than vanity, unless accompanied by that better and higher and purer knowledge which lifts men above the material world in which they dwell, and makes them wise unto salvation.

Once more, Sir, permit me to thank you for the encouragement your words have given me, and for the hearty good wishes with which you cheer me on my way.



INAUGURAL DISCOURSE.



INAUGURAL DISCOURSE

THE occasion on which we are assembled, the ceremonial in which we participate, and the associations naturally clustering round a spot which learning has hallowed by making it her seat, would seem to leave little choice in regard to the theme which should occupy us to-day. A noble institution devoted to the highest mental culture of generous youth, after more than a century of honorable usefulness and distinguished success, is about entering upon another year of its beneficent labors; and at this moment the guidance of its operations and the guardianship of its interests are committed to an untried hand. It would be in accordance with a generally prevalent usage, and would be possibly also a compliance with general expectation, that the brief space allotted me on this occasion should be devoted to a declaration of the views by which, as an educationist, I expect to be governed, and according to which I desire to see the course of education conducted in this institution. If I do not conform to this usage or meet this expectation, it is not because there is anything in those views uncertain or doubtful; or anything which I apprehend, before an enlightened audience

like this, would be likely to meet with dissent ; but rather because, on the other hand, I have already so often and so fully made them public, as to leave me no reason to suspect that they are either unknown or misapprehended.

The subject of education is one which has occupied the most thoughtful minds of every age ; and it is probable that the fundamental principles which should direct a truly liberal education may be as clearly deduced from the writings of Aristotle, of Seneca, or of Quintilian, as from those of the most judicious thinkers of modern times. And yet there is probably no subject in regard to which, were we to judge from the controversial literature to which it has given rise, we might be led to infer that there is so little that is settled, and so much that is uncertain or doubtful. Within the past twenty or thirty years, our long-tested and successful system of collegiate instruction has, in particular, been so persistently decried and so seriously menaced, as to fill the friends of sound education throughout our country with alarm, and to compel them to discuss the whole theory and practice of our higher education with anxious earnestness and by the light of first principles. In these discussions I have endeavored, according to my ability, to bear my part. It has, by force of circumstances, been made my duty — a duty which I have esteemed a privilege — to withstand the dangerous assaults of that blindly destructive spirit which would sacrifice the admirable system of mental culture existing in our colleges to some visionary scheme of presumed higher utility. In acquitting myself of this duty, I have held that the end to be kept in view in liberal

education should be to make of man all that, as an intelligent and moral being, he is capable of becoming, in view of the immortal destiny before him, and with but secondary regard to the accidental interests of this temporary life. I have held that such a culture will actually make him more fit to fill successfully any position to which he may be called in this world, will make him a more efficient worker, a more useful member of society, a better citizen, than any training especially planned with the intent to produce these specific results. And I have also held, that the studies which now occupy the most prominent place in the course of collegiate training, and which have ever occupied that place since our collegiate system was founded, are the studies which, on psychological grounds, are manifestly best adapted to furnish such a culture.

I hesitate to enter again to-day upon a path which I have trodden so often before; and I hesitate the more because the controversies to which I have alluded have apparently subsided. I could offer but little which would possess the merit of originality. I might weary by presenting arguments which, through repetition, have lost the gloss of novelty; and I scarcely need now renew a profession of faith which has been so often distinctly set forth before. I presume, therefore, upon the indulgence of my audience, so far as to select a theme suggested by the peculiar circumstances in which I find this institution at the moment when my connection with it commences.

The Board of Trustees of Columbia College have long entertained a purpose to extend the field of in-

struction occupied by the institution, so that it may embrace at once larger and higher ground. Such a design cannot, it is obvious, be carried out at once in all its completeness. It is necessary, that, in the beginning, it should be restricted to certain determinate branches of knowledge ; and these, in order to secure the largest probabilities of success, will be most wisely chosen from among the class of subjects in regard to which there is most urgently felt the sense of a great public want. Such are, at present, the physical sciences as applied to the arts : and the object now immediately proposed contemplates the opening of a department in which shall be taught the modes in which geological, mechanical, and chemical science may be brought to bear upon the development of the mineral resources of the country.

It seems indispensable, in a country like this, where nature remains to so large an extent unsubdued, and the temptations to every description of industrial enterprise are so vast, that the first attempts to expand educational institutions into the form of proper universities should be made with a view to take advantage of that practical spirit which will encourage more extended and more thorough teaching in the direction in which it finds it profitable to do so. By pursuing this course we secure permanence and strength ; and when these are once ours, we may make our schools the agencies by which not merely the practical uses of science shall be made known, but through which also investigations may be instituted with a view to enlarge the domain of science itself.

Moreover, to have established a successful school

in one branch of knowledge is to have created a nucleus around which others may cluster. And as, in our sister institution at New Haven, to the school of science originally there established have been since added schools of philosophy, philology, and history, and will yet doubtless be added other schools embracing every department of teaching in letters and science, so we may reasonably expect that our present beginning may be the means of drawing to us such aid from those to whom the prosperity of this college is dear, or who would not willingly see the institutions of this magnificent city inferior to those of many minor towns, as may enable us also to present, as time advances, all the various attractions to seekers after knowledge, which are necessary to complete the full ideal of a university.

At present, however, our newly established school is but a school of physical science; and the circumstance that the commencement of its active operations coincides with the date at which my own connection with the college begins, has led me naturally to the train of thought to which I venture to invite your attention. My theme may be briefly stated to be the relation of physical science to revealed religion.

While my life has been principally devoted to the cause of education in general, it is known, I believe, that my own special pursuits have been connected with the science of nature. I love that study both because it is beautiful in itself and because its influence upon the mind and upon the character seems to me to be eminently salutary. I believe that there is no study of which the legiti-

mate tendencies are more distinctly to foster in man the spirit of humility, or to awaken within him feelings of profound reverence toward God. I believe, indeed, that in spreading out His wonderful works before us, and clothing them with so many attractions, it has been the manifest purpose of the Creator to make them the means of drawing men to Himself. And I believe that the religious sentiment thus naturally inspired is one which disposes the soul to receive with delight and gratitude those more distinct announcements of Himself and of his purposes toward men, which He has made in his written Word.

It is nevertheless true, that modern physical science, as it has been built up gradually by methods founded on the precept of Bacon and the practice of Galileo, has been fated, from its earliest beginnings, to encounter the jealous suspicion, or the open and active opposition of those who have been charged with the guardianship of the interests of religion. For the earlier manifestations of this spirit a natural explanation suggests itself. Previously to the recognition of the great principle of induction as the guide of philosophic inquiry—the epoch from which our modern science dates—there was already in existence a species of natural science resting chiefly upon hypothesis, but interwoven with many inferences drawn from passages in the sacred writings. To any intelligent reader at this day it will be apparent that these inferences are rarely warranted by the texts from which they are deduced, but that they are in most instances the offspring of the fertile imaginations in which the system originated. Under the title

“De Principiis Rerum Naturarum,” this philosophy was everywhere taught in the mediæval schools. Assuming to be founded on revelation, its truth became matter of religious faith; and any doctrine conflicting with it was denounced without inquiry as heretical.

Thus, in her very birth, our modern science found herself confronted with a formidable and discouraging opposition growing out of the preconceptions of the religious world. Nor, unfortunately, though the philosophy of the Middle Ages has been long exploded, has the breach which had its beginning there been ever entirely healed. Nature still continues to be studied in the Bible by the light of philology, and the results of this study are made the touchstone of the acceptability of conclusions founded on the most careful and conscientious study of nature herself. That this is a process which ought to be inverted, and that science should be made the torch by which to read the Scriptures, or should supply the clew to their interpretation, is a principle which is yet received with very limited favor. And thus, for every ancient controversy between science and religion which has perished from the memories of men, another and another more recent have sprung into life. A state of things has thus grown up, which is most sincerely to be lamented. It is one which, if it continue, is destined to produce most injurious consequences to science and to religion at the same time. It will injure science by enlisting against her the most powerful of influences,—the public opinion of probably the largest portion of the Christian world. Such a discouragement she is little able to bear. Even now

her advances are made under circumstances of quite sufficient difficulty. Though daily conferring upon the human race gifts of inestimable value, few of these are the return she makes for any benefit received, for any honor conferred upon her sons, or any support accorded to her by governments. Most of the brilliant discoveries which have signalized her history, which have brought wealth to nations, and endlessly enlarged the sources of human comfort, have been due to the solitary, patient, and unaided labor of her disinterested votaries. An enlightened regard for the highest interests of society would dictate a policy very different from this. It would suggest that the strongest incentives should be held out to the prosecution of scientific investigation, by the most liberal provision of the means necessary for conducting difficult and costly researches, and by crowning successful labor with its justly merited rewards. The time may yet possibly come when the world will sufficiently feel its obligations to science, to recognize the wisdom of such a policy; but this certainly will not be unless she shall succeed in commanding more fully than is apparently the case at present the confidence of that better portion of mankind by which she is too generally regarded as an insidious enemy to man's highest interests.

Nor, on the other hand, can religion fail seriously to suffer from the antagonism presumed to exist between her teachings and those of the investigators of nature. It is not possible that scientific progress should cease. Nor is it possible that scientific men can forego convictions formed upon evidence which human reason is incapable of resisting. If religion

disclaims them, they will be driven to disclaim religion; and thus, without any choice of their own, the whole weight of their great authority will be marshalled in opposition to the truth of the Bible. And, observe that this is a controversy which men of science do not invite or provoke. They have not been the first to seek for evidences of discordance between the results of their inquiries and any real or supposed assertions of the scriptural narrative. On the other hand, when compelled to meet this question by the injudicious assaults of men who, with more zeal than wisdom, have denounced their conclusions as necessarily false because contradicted by the Bible, many of the most eminent among them have labored with earnest sincerity to demonstrate the absurdity of the objections, and to show that nature and revelation, so far from being at variance, are entirely in harmony with one another. It is the mistaken friends of religion themselves who insist on occupying the perilous position, that, if modern science be true, the Bible must be false. It is they who deride and ridicule schemes of interpretation honestly suggested with a view to reconcile the language of sacred writ with the teachings of nature; and who, with singular lack of wisdom, maintain that no such reconciliation is possible. They will not recognize the fact, that, in planting themselves upon this ground, they are doing more to subvert religion and bring the Bible into discredit among men, than all the speculative atheists like Spinoza, and all the ingeniously logical skeptics like Hume, and all the malignant scoffers like Voltaire, combined, have ever been able to accomplish. In spite of the most deter-

mined efforts on the part of these several classes of enemies, the Bible still holds its place in human reverence; but let it be once distinctly settled as the final and unalterable decision of the religious world, that that volume makes it our religious duty to disbelieve and reject the perfectly demonstrable truths disclosed to us by such a science, for example, as geology, and it needs no extraordinary prescience to perceive, that, before another generation shall have passed away, its authority will be utterly destroyed. It has astonished me that there should be so many good men who do not see this danger. It has astonished me still more that there should be so many who do see it very clearly, and yet imagine that it may be averted by putting a ban upon science, and endeavoring to suppress its cultivation. Such efforts are, in the very nature of things, futile. Truth cannot be frowned out of existence, nor is there any weight of human authority heavy enough to keep it down. On the other hand, error, in the field of physical inquiry, needs neither persecution nor denunciation to disarm it of its power to harm; it has only to be let alone, and it will inevitably die of itself.

It is, therefore, at this moment the most desirable of all things, it is the great need of the times, that the friends of religion should be induced to lay aside the distrust with which they so generally regard the progress of modern science. And especially is it to be desired that they should no longer disdainfully repel the advances which thoughtful men of science have honestly made toward a reconciliation of opinions; or assail, with the weapons of ridicule and contempt, every scheme of scriptural interpretation de-

signed to prove that there is no necessary conflict between the book of nature and the book of revelation. Some reasons there are which suggest themselves upon the slightest reflection, going to show, that, in assuming this new attitude, they need fear no danger to the cause which they have nearest at heart; while it is obvious, that, in maintaining their present one, there is a danger which is both serious and real. Without attempting to exhaust the subject, I will mention a few of these reasons.

And in the first place, there is nothing in the ends which science proposes to excite alarm in the mind of any one who desires the largest improvement and the highest good of the human race. For the object of science is truth. Whatever the subject of investigation, it is truth, and truth only, which she seeks. In the pursuit of this end she puts out of view, and for the time disregards, the prevailing and preconceived opinions of men. She offers them no intentional disrespect. She seeks to bring them into no discredit. She undertakes neither to affirm nor to deny their soundness; but, in so far as they are opinions or impressions, or even convictions merely, they belong not to the class of evidences with which she has to do. Experience has proved that many of the beliefs which have at times prevailed almost universally, have had their foundation in ignorance or prejudice or superstition. Many have been received traditionally, and have been acquiesced in by each succeeding generation for no better reason than that they had received the assent of that which went before. And though all the opinions of men in regard to natural things which have thus descended to us

from the past may not be equally involved in error, there is manifestly no security for the investigator of nature, except in keeping his mind clear from every possibility of bias which might arise from such a source.

But while truth is the one simple aim toward which the labors of Science are directed, it is not claimed that she alone is competent to the attainment of all truth. Her range is limited by the range of human observation, and by the imperfect power of the human understanding; but within these limits her methods are sure, and her results unquestionable. The great truths which relate to the being and attributes of God, to the origin of sentient life on earth, to the purposes of God toward His intelligent creatures, to the duties they owe to Him, and to their possible destiny hereafter,—these are truths which science can never elucidate, and which can only become known to us by direct revelation from the Author of our being. And it is to this class of truths that revelation has been confined; while in regard to all which man is capable of discovering for himself, he has been left to secure the benefits of knowledge or to suffer the evils of ignorance, according as he may exercise the powers or improve the opportunities which he is here permitted to enjoy.

And in this very abandonment of His intelligent creatures to their own resources, we have an evidence that the investigation of nature, the prosecution of human science, is in accordance with God's will. For deep in the nature of the creature He has implanted the desire to know, and the capacity to enjoy knowledge, as well for its own sake as for any

of its possible uses. And the truths which He has placed at the level of the creature's understanding, and permitted to be disentangled from among the mysteries of creation, are singularly fitted to awaken emotions of reverence, and turn the thoughts to Him who is the Author of all truth. It would seem, indeed, that these truths had been purposely veiled, covered up, and concealed under the countless diversified forms of this majestic and beautiful universe, to the end that reason may have an incentive to inquiry, and, discovering, may wonder and adore ; yea, to the very end that man, by searching, may find out God, though he can never hope to find Him out to perfection. The spirit, therefore, in which science has its birth, is a spirit implanted by God himself; the subjects on which it is employed are God's own works ; and to suppose that the conclusions to which its inquiries legitimately lead can be at variance with God's own immediate testimony, is to throw dishonor upon God himself.

I will not be so unjust to any who oppose the progress of science on religious grounds, as to suppose that they are afraid of truth. I will not so disparage their understandings as to presume them ignorant that truth is never inconsistent with itself. And yet it seems impossible to explain the anxiety and alarm which they so often betray in connection with this subject, unless upon one or the other of these hypotheses. It is too late in the history of intellectual progress to take the ground that science is delusion. If the conclusions which it claims to have fully established are not to be relied on, then nothing in the whole circle of human knowledge is cer-

tain. The fact of revelation itself is ascertained to us by evidence offered to the reason. To us, it is a fact purely historical, to be examined precisely as other historical facts are examined. If we are competent to judge of its credibility, if we are even justified in asserting that we know its truth, then certainly we may reasonably claim that we are capable of tracing effects in the material world to their physical causes, more especially when, in our personal experience, we have been familiar with the operation of those causes all our lives.

But these physical causes, these powers of nature, as they are called, what are they? If we suppose that they exist without God, that they operate by any inherent energy of their own, we are pantheists, we have no need of God at all, our only God is nature. But if, on the other hand, we suppose that they are only modes through which God sees fit to manifest His own energy, the truths to which we are led by their attentive study are nothing less than revelations. They demand our acceptance not merely upon the authority of imperfect human reason, but as being directly vouched for by God himself. The distinction commonly made between nature and revelation, therefore, as means through which we may be permitted to know God, is in this view unimportant, perhaps prejudicial to the interests of true religion. It is at any rate a distinction of form merely, and not of essence. To the prophet God speaks through His Spirit, to the philosopher through His works; in either case the truth of the communication rests upon the same guaranty.

We often hear men talking of the God of nature

and the God of revelation, in terms which might justify the inference that they supposed that they were speaking of two different beings. If in any case such a dualistic notion is really entertained,—though to entertain it must imply very imperfect conceptions of what is necessary to the Divine nature,—the absurdity of a possible conflict between natural and revealed religion is not upon the surface obvious. But even to use the language without consciously admitting the false conception, is so far to keep this absurdity out of view as unquestionably to have led many good and pious men to deprecate the study of nature altogether, and to desire that it might be completely suppressed, through fear that the truths it reveals should not be in harmony with those other truths which have been made known to us by the same Author, through His written Word.

But it may be said this apprehension is not an idle one. It is justified by the actual history of biblical interpretation and physical science. If science and the Bible had never come into conflict, it might, says the objector, be very plausibly argued, or assumed, indeed, without argument, that they never could do so; but when such a conflict is asserted to have actually occurred, the question becomes a question not of probability, but of fact. Is it, then, a fact that such a conflict as is above supposed in any case really exists? I should be very sorry to believe so. I do not believe so. Unfortunately, my belief seems not to be the universal belief. Otherwise, indeed, I should have no motive for these observations; there would be no breach between science and religion to be healed; no estrangement between the Academy

and the Church to be overcome; no want of harmony between the pious hearts that simply feel God's power and the comprehensive intellects that perceive and know it. And yet, if we inquire to what source are to be ascribed these suggestions of possible discordance between physical and scriptural truth, we shall not find that they have generally originated with scientific men,—not at least with that higher order of men who have been first to discover the great truths which weaker minds have afterwards sought to employ in sapping the foundations of Christian faith. In so far as the scientific world is to be held responsible for these unhappy divisions, they are mainly due to a class of which it has little occasion to be proud,—shallow and conceited sciolists, whose shreds of knowledge are gathered at second-hand, and who pronounce their conclusions with a confidence so much the greater as the weight of their authority is less. I do not mean to say that there have not been some distinguished students of nature, even original discoverers, who have also been skeptics in religion; but I believe not more frequently than in the case of other men of equal mark. I believe, indeed, that the rule is entirely the other way. I believe that the study of nature tends positively to foster the spirit of humility, of self-abasement, of reverence, of devotion. I believe, indeed, that it is the only study, except that of the Bible itself, that does so. With the study of language or of abstract mathematics it cannot in this respect be compared, for in regard to the sentiments just spoken of, their influence is indifferent. But with abstract philosophy, or even with that

theology which affects philosophy, the comparison is easy; for the world is full of instructive examples. Philosophy, I suppose, is as far from physical science as it is possible to be. Philosophy and Physics are each other's antipodes,—the two poles of the intellectual sphere. Now it is a question worthy of the consideration of those who are accustomed to decry science for its asserted Antichristian tendencies, how it happens that most of the theological schools of Germany have been, during a great part of this century, if they are not still, schools of irreligion; while of the names which adorn or have adorned the annals of physical science in the present or the past, the most illustrious, with scarcely an exception, are names of single-minded, humble Christians. Have we not here a strikingly significant fact? These two subjects, philosophy and the physical sciences, are the two, and we may almost say the only two, which stimulate the curiosity of men to know the causes of things, which lift men's thoughts to the Great First Cause of all things. The first of these, rising on presumptuous wings into the limitless region of the transcendental, boldly essays to bring God himself within the grasp of the finite intellect; but baffled in the vain endeavor, ends usually in blotting Him out of existence, or confounding Him with His works. The other, bowing before the august majesty which it dares not attempt to conceive, seeks, in a lowly and teachable spirit, to comprehend some little fragments of these lower works themselves, and, shrinking from the arrogance which would demand what God is, limits itself to the humble and reverential inquiry, "What hath

God wrought?" The very statement of the case is sufficient to show the relative tendencies of these studies. Philosophy may no doubt be pursued in a Christian spirit; but it has had, in point of fact, too often the fatal effect to undermine, subvert, and destroy in its devotees all belief in the personality of God, and so to obliterate every sentiment of fear or reverence for Him in the human heart. Physics, on the other hand, by constantly presenting new and ever-varying examples of power and forethought and design in the adaptation of means to ends, fosters and cherishes into ever-increasing strength the conviction that God is, that God reigns, that He works perpetually before us now, that by Him all things were made, and without Him was nothing made that was made. Now what if there has been here and there a physicist who disowned revelation? How many unfortunately are there who are not physicists nor philosophers who have done the same! This latter fact proves that men may be perverse without any obvious perverting influence; the former that they may be so in spite of influences positively salutary.

It may, then, be safely asserted that there is nothing in the nature of the object which science proposes to itself,—the discovery of truth,—which should disquiet any sincere believer in the truths of revelation. The same remark may be extended to embrace the results to which the systematic pursuit of scientific investigation conducts. For science leads to the detection of law. Physical truth presents itself to the inquirer at first in the form of isolated, disconnected facts. But as facts accumulate, they

are observed to stand in certain relations to each other, to arrange themselves spontaneously in certain natural groups. These relations presently appear to be necessary, and to depend upon a principle of constant causation. By carefully studying them, we acquire confidence to predict, in certain determinate circumstances, what consequences shall follow. If our prediction shall be verified under all the varying conditions necessary to insure precision and eliminate error, we conclude that we have discovered something more than facts, that we have detected a governing principle, in other words, a law. It was in this way that Kepler, after seventy laborious, long-continued, and unsuccessful efforts, pursued through a period of twenty weary years, arrived at length at a principle which harmonized the observed positions of the planet Mars. It was in this way that Newton, after comparing the moon's deflections with the observed fall of heavy bodies on the earth, was enabled, at a distance of some ten or twelve years from the commencement of the inquiry, to announce the great law of universal gravitation. Through all the domain of physical research, such has been the constant progress, and such, where progress has been sufficiently advanced, the invariable result. And although yet much, very much, of the great field of nature remains to be explored, and though there may be many phenomena which we do not yet sufficiently comprehend to be able to refer them to their laws, every successive instance in which order has been observed to exist where ignorance had assumed lawless irregularity or blind chance to rule, adds new force to the presumption which has at length been

adopted as an axiom in physics, that law is everywhere present.

But law in nature is one of the most conclusive evidences of the presence and power of God. If God is felt in His creation, how can He be felt except in the form of law? His truth and His immutability require that His acts should be consistent with themselves. Contradiction and caprice are excluded by the very necessity of the case. So that law in nature is neither more nor less than God in nature; and natural phenomena are the direct manifestations of divine power. Now I know that it is often said that this idea of the invariability and universality of law tends to bring into discredit those narratives of events in which law has been manifestly suspended. This is another of the grounds on which science and the Bible have been brought into conflict. But in the view just taken of law the reproach thus brought against science is without any substantial foundation. For if law is but the manifestation of God's power, the suspension of law is just as much so.

There is, however, undoubtedly, a speculative theology which teaches a doctrine widely different from this; which beholds in law an energy irresistible, inexorable, unalterable; which makes, that is to say, law itself God. This, at least, if I understand it, is essentially and ultimately the meaning of pantheism. If such be the view which we take of the divine nature, miraculous occurrences are, I admit, quite impossible; for the God of pantheism is without personality, without consciousness, without will. But it must be remembered that pantheism is born not of Physics, but of Metaphysics; that it is radically

at variance with the religion of the Scriptures; and that, after we have consented to receive its more general teachings, the particular point here in question loses whatever importance or interest it might previously have possessed. To the Christian, however, or even to the Deist who admits that God is anything more than an impersonal figment, the universality of law in nature must bring a grateful confirmation to his faith.

I would observe, in the third place, that while science in its progress is favorable to the growth of sound religion, it is totally destructive of those idle superstitions by which religion has been so often marred, and which have caused her to bring only gloom and terror where it should be her holy mission to comfort and cheer. In using the term science here, I intend it to embrace all intelligent acquaintance with the causes of things. In its common acceptation, the word is supposed to apply only to that abstruser knowledge which is comprehended with difficulty and confined to the few. But there is very much which in this sense was once science that has now become the common property of all the members of every enlightened community. It is, indeed, principally through this process of diffusion that science contributes to the benefit of mankind. A new truth, in its first discovery, has rarely any obvious relation to human interests. When the elastic force of watery vapor was first observed, we were very far from the steam-engine. When the attractive power of the galvanic wire for iron was first noticed, we were very far from the electric telegraph. With the progress of discovery, scientific truths be-

come principles of art, and scientific knowledge becomes popular knowledge. There are now few natural phenomena, even though occasional and rare, of which the causes are not generally known ; few, therefore, which excite anxiety or awaken alarm. And more than this, the idea of the universal prevalence of law has become a popular idea ; so that phenomena which are not understood are no longer attributed to causes above nature. Where ignorance prevails, the case is very different. Incidents of which the causes are obscure or unperceived are ascribed to influences capable of controlling natural events and affecting human happiness, — often to agencies supposed to be at the same time intelligent and malign. Particular times, again, are, for no intelligible reason, esteemed to be lucky or unlucky, particular places fall under suspicion and are shunned, particular acts or utterances are supposed to exert a mysterious power, and occult virtues are ascribed to amulets and charms. Into minds capable of receiving notions like these, it is not difficult for a belief in all the extravagances which have been imputed to sorcery, magic, and witchcraft to enter. And the history of even comparatively recent times sadly illustrates the degree to which human nature can become temporarily divested of all its more amiable traits, in the general terror produced by a supposed prevalence within a given community of these diabolical practices.

Now it might seem that the Bible alone, to those who make its pages their study, should be sufficient to dispel such idle imaginations as these, and to redeem men generally from the dominion of supersti-

tious fears. But that this is not true is made evident by the historical fact that every one of the superstitions just mentioned has prevailed in Christian times and among Christian peoples. Many of them are not yet extinct,—none of them perhaps universally. In Europe, during the Middle Ages, magical practices were visited with the severest denunciations and penalties by the public authorities, both ecclesiastical and civil. No man could perform the simplest experiment in physics without falling under suspicion. In the thirteenth century, to have produced a friction match or a toy-torpedo such as a child cracks upon the pavement would have probably cost the inventor his life. It was in that century that Roger Bacon, a man of wonderful originality and independence of thought, two hundred years in advance of his generation, was arraigned, at the age of sixty-four, upon a charge of magic, and imprisoned for ten years. His works, which contained nothing more dangerous than a discussion of the causes which had obstructed the progress of science, had already been condemned many years before, and he had been deprived of the privilege of teaching. All works on physics were suppressed with like severity. Two French councils successively included the whole in one sweeping denunciation.

But it is unnecessary to multiply specifications of this description. History is full of them, as late as the end of the seventeenth century or later; nor were even those pious colonists who fled from religious intolerance in their own country, to plant upon the rocky shores of New England the germs of civil and religious liberty, exempt from the common weak-

ness which characterized their age and generation. These things may seem to us now sufficiently incompatible with the spirit of Christianity and with the teachings of the Bible. But the truth is, the Bible cannot be read aright except in the light of science. It is not in the particular we have been considering only, that the Christianity of an unenlightened age appears in unfavorable contrast with that of one more advanced: it is in the entire character and tone of the religion. "Christianity," says Milman, "may exist in a certain form in a nation of savages, as well as in a nation of philosophers; yet its specific character will almost entirely depend upon the character of the people who are its votaries. It must be considered, therefore, in constant connection with that character; it will darken with the darkness and brighten with the light of each succeeding century; in an uncongenial time it will recede so far from its essential nature as scarcely to retain any sign of its divine original; it will advance with the advancement of human nature, and keep up the moral to the height of the intellectual culture of man."

The emancipation of the race from the slavery which is born of superstitious error is here ascribed to the progress of intellectual enlightenment in general. And this is the view of the subject which is perhaps most commonly taken. History, however, furnishes abundant evidence of the inefficacy of mere learning to accomplish such a result. The age which, in England, produced a Milton, a Bacon, a Dryden, and a Pope, was certainly not an age deficient in literary culture of the highest order. Yet the legislation of that age and its judicial history are deeply

tinged with the errors I have signalized ; and it surely cannot be said of these that they received their character from the men the least enlightened of their time. In this country the extravagances of the Salem persecution were encouraged, if not originally instigated, by the educated clergy, including among their number the president of the only seminary of higher learning then existing on the continent. The fault of the education of that time was its neglect of the study of the phenomena of nature. Physical science had indeed made some progress, but it had attained to no diffusion beyond the narrow circle of its immediate votaries. Scientific men were generally learned, but there were very few learned men who were scientific.

Now I presume I need not argue that superstition is hostile to true religion. I need not argue that the Christianity which, according to Milman, may exist among a nation of savages, and the Christianity which sheds its benign influence over the civilization of our own continent to-day, cannot be both of them equally the Christianity of the New Testament. The spirit and the power of Christianity manifest themselves in doing good, in pity toward the erring, in the unremitting endeavor to soften for all men the inevitable miseries of this lower life. But the spirit which is fanned by superstition makes of religion a terror rather than a blessing. It divests Christianity of those features of mildness and benignity by which it is adapted to the wants of our weak and imperfect nature, and converts it into a source of perpetual anxiety and apprehension. Consider, for example, the asceticism which came in with the corruption of

Christianity, and which has not even yet entirely disappeared, the gloomy isolation to which it led numbers to subject themselves, and the extraordinary forms of self-torture to which it impelled them to submit, and say in what respect these things are less melancholy subjects of contemplation than the more recent suttee of India, the exposure of infants on the Ganges, or the self-immolation of frenzied fanatics beneath the wheels of Juggernaut. If the philosophic study of nature has contributed in any degree, as I believe it has greatly, to disenthral the human imagination from that slavery to error in religious beliefs which has so painfully in every age embittered human life, it has rendered an inappreciable service at the same time to the cause of enlightened Christianity.

In what I have said, I have aimed to show that there exists substantial reason for assuming the truth of the following propositions:—

1. Science, in its legitimate tendencies, is positively favorable to religion.
2. The religion which science favors is in its spirit such a religion of love to God and good will toward men as we find inculcated in the gospel.

The truth of the first of these principles was clearly perceived and distinctly affirmed by the profoundest thinker of the seventeenth century; and nothing in the celebrated "Essay on the Advancement of Learning" better illustrates the singular sagacity and acute discrimination of the illustrious author of that admirable work, than the manner in which he accounts for facts which seem occasionally to conflict with his doctrine. "It is an assured

truth and a conclusion of experience," is his language, "that a little or superficial knowledge of philosophy [natural philosophy] may incline the mind of man to atheism, but a farther proceeding therein doth bring a man back again to religion: for in the entrance of philosophy, when the second causes which are next unto the senses do offer themselves to the mind of man, if it dwell and stay there, it may induce some oblivion of the highest cause; but, when a man passeth on farther, and seeth the dependence of causes and the works of Providence, then, according to the allegory of the poets, he will easily believe that the highest link must needs be tied to the foot of Jupiter's chair."

But it may be replied that the foregoing reasoning is too general to meet the difficulties which embarrass the actual relations of physical science to revealed religion. It may be asked what we have to say of such startling speculations as the nebular hypothesis in astronomy, the teachings of geology in regard to the age of our planet, the asserted discoveries relating to the antiquity of man, the doctrine of progressive development, and other similar matters, in which science is in direct conflict with impressions which are generally supposed to be legitimately derived from Bible history. To these questions it would be impossible in this place to reply in detail; but it is easy to state the general principles by which the reply should be guided.

And in the first place, the Bible is not a book of science. Its messages to man relate to matters of deeper, more permanent, and more solemn interest than any questions concerning the phenomena of the

material world, or the laws which govern them, can possibly possess. Its language is dictated simply with a view to intelligibility. It was adapted to the understandings of the generations to which it was addressed. If it refers to objects or phenomena in the natural world, it speaks of them as they seem, and as they are spoken of even now in the language of common life, without referring them to their remoter causes.

To have given professedly a philosophic exposition of the principles of natural things would have been inconsistent with the objects for which the Bible itself was given. Such an exposition must either have presented truth as it will be when (should that ever happen) the process of discovery is exhausted, — truth, therefore, which would in many points conflict with our present convictions, and which must always have been in conflict with the convictions of the ages which have gone before us ; or it must have embodied the imperfect, and, in most things, erroneous philosophy of its own day, and so have been brought into permanent discredit by the earliest steps of advancement. On either supposition, it would have been out of harmony with the actual state of scientific opinion at any given period, and would have lost, or have failed from the beginning to secure, the confidence of men in its divine origin. In the fact, therefore, that the science of nature is, to beings of limited powers, like the human race, a science of necessary progress, in which truths which seem to be most assuredly established are ever liable to be superseded by profounder truths, we find a satisfactory reason why we might expect it to be ex-

cluded from a revelation relating only to the interests of man's higher nature.

In the second place, without undertaking to deny that the conclusions gathered from the study of the book of nature may sometimes seem at variance with impressions derived from the pages of the Bible, it must be remembered that these impressions are themselves liable to be determined by the preconceived notions of the reader, and that they are not of necessity the only interpretations which the language will bear. On the occurrence of any such apparent disagreement, the proper and reasonable course is to use discovery as an aid to interpretation; and not to insist, as is so often and so unwisely done, that the discordance is irreconcilable.

Another observation may here be fitly made. Of the more recent theories which, in their discussion, have excited among the friends of religion the greatest uneasiness, it can hardly be said of one that it is an accepted theory of science. The speculators who show the least respect for the religious convictions of men are often quite as regardless of the ordinary principles of common sense. Take, for example, the doctrine of progressive development. It is only the ingenuity displayed by its advocates which has secured for it more than a momentary attention. The strength of the scientific world has always been enlisted against it. Though repeatedly revived, it has been just as often trodden out of life. And so it must be with all mere hypothesis. Nothing can claim a permanent place in science which fails to attain the certainty of truth. And nothing which is true can be dangerous.

Now there are two things needed, in order that the scientific and the religious world may be led to lay aside their mutual distrust, and induced to work harmoniously together in the cause of truth, which is the common cause of both. The first is that religious men should be willing to study science for themselves, and should refrain from pronouncing upon its tendencies until they first understand it. For, by thoroughly acquainting themselves with its conclusions and the evidences by which they are supported, they may discover that these are not so irreconcilable as they had supposed with the rightly interpreted language of the Bible. They will learn that there is much which is demonstrably and undeniably true, and will perceive the great danger of assuming that this is or can be in possible conflict with anything contained in God's written Word. They will learn, in short, the indispensable necessity of reading Scripture by the light of science, and not attempting to control the conclusions of science by an exegesis which has all the possibilities of error which spring from human imperfection.

On the other hand, if unconvinced by the evidences presented, they will, in any controversy on the subject in which they may engage, be placed, by understanding them, in a position of powerful advantage. Hitherto it has unfortunately happened, in numerous instances, that those who have felt themselves called upon to defend religion against what they assumed to be the dangerous tendencies of science, have evinced in their arguments so little acquaintance with the subjects they undertook to discuss as to injure rather than benefit the cause they

have had at heart. They have committed the fatal error of attempting, with incredible labor, to disprove facts rather than to invalidate inferences; thus failing to perceive where their strength might really tell, and where it must be worse than wasted. In this failure, they have failed at the same time to command the respect of their opponents; and have naturally contributed to encourage the opinion that the cause they advocate is equally undeserving of respect. There is, therefore, no more urgent need, at the present time, than that pious men and earnest Christians should be also cultivators of scientific study. By becoming such they may, if they please, purify science from the reproach of irreligion which they bring against it. If there be a semblance of justice in the reproach, to what can it be owing but to the fact that the field has been voluntarily abandoned by the religious. The wonder, indeed, is, that in some departments of science there is any religion left. Who would not suppose, that, after geology had been put under the ban of the modern church almost as unqualifiedly as astronomy was by the ancient, a devout Christian geologist would be an unknown phenomenon. And yet we shall hardly find anywhere more beautiful examples of personal piety than have been presented by such geologists as Hugh Miller, Adam Sedgwick, Edward Hitchcock, and Benjamin Silliman. I could largely extend this list, but it is unnecessary. It is men like these who are qualified to pronounce upon the tendencies of the sciences which they cultivate. And if they find in them nothing to disturb their Christian faith, how can we doubt that other men equally pious, though

without their special knowledge, whom the course of science seems to fill with so continual anxiety, would attain a similar tranquillity, if they would consent to be better informed. In short, the true position, the strong position, the only impregnable position against the assaults of skeptical physicists is in the field occupied by the assailants themselves.

There is, on the other hand, perhaps, a spirit to some extent prevalent among scientific men which ought to be corrected. If they have sometimes been held up to undeserved opprobrium, they have repaid the injury with too manifest contempt; and if their best-established conclusions have not been respected, they have possibly maintained too positive a tone in regard to those whose claims to respect were more questionable. While the object of science is truth, there is much in the scientific teaching of any given period of which the proof is only a high degree of probability. Every such portion of doctrine holds its place only provisionally, and is liable to be displaced or subverted by a truth more assured. Now, just in proportion to the obstinacy with which the highest evidence is resisted, a disposition seems to manifest itself to insist unwarrantably on positions sustained by feebler evidence. And the controversialist who assumes to speak in the name of science displays a spirit of self-satisfied superiority, and indulges a tone of confident assertion, which confirm opposition instead of conciliating favor.

If, then, religious men, on the one side, should acquaint themselves better with science, scientific men who are not professedly religious, on the other, should cultivate a more modest tone in presenting

views which are still open to doubt. Let neither party bring against the other railing accusations; but let each use toward the other the language of Christian charity, and act in the spirit of Christian forbearance. Both are in the pursuit of the same avowed object; let them harmoniously pursue it together.

Something like this must take place, and must take place soon, or most deplorable consequences are in store for the world. The progress of science cannot be arrested. It has an inherent vitality which acquires new vigor with each succeeding year. It is, moreover, day by day and hour by hour, securing a stronger hold upon men's consideration and regard, by intertwining itself more and more with all their earthly interests. Estranged from religion it may exert a fatal power in dragging men after it. It may become in fact the baleful influence which it is now only suspected of being capable of becoming.

Let science and religion be harmonized, let their devotees unite lovingly their efforts in one common search after truth, and nobler triumphs than have ever yet been realized may crown their alliance. Their labors will be fruitful, for God's blessing will be upon them. Year by year, in constantly increasing profusion, the hand of science shall scatter benefits over every land. But infinitely more valuable than all she has ever done or can do to promote the comfort of mankind, will be the lesson she will bring, "Seek ye first the kingdom of God and His righteousness, and all these things shall be added unto you."

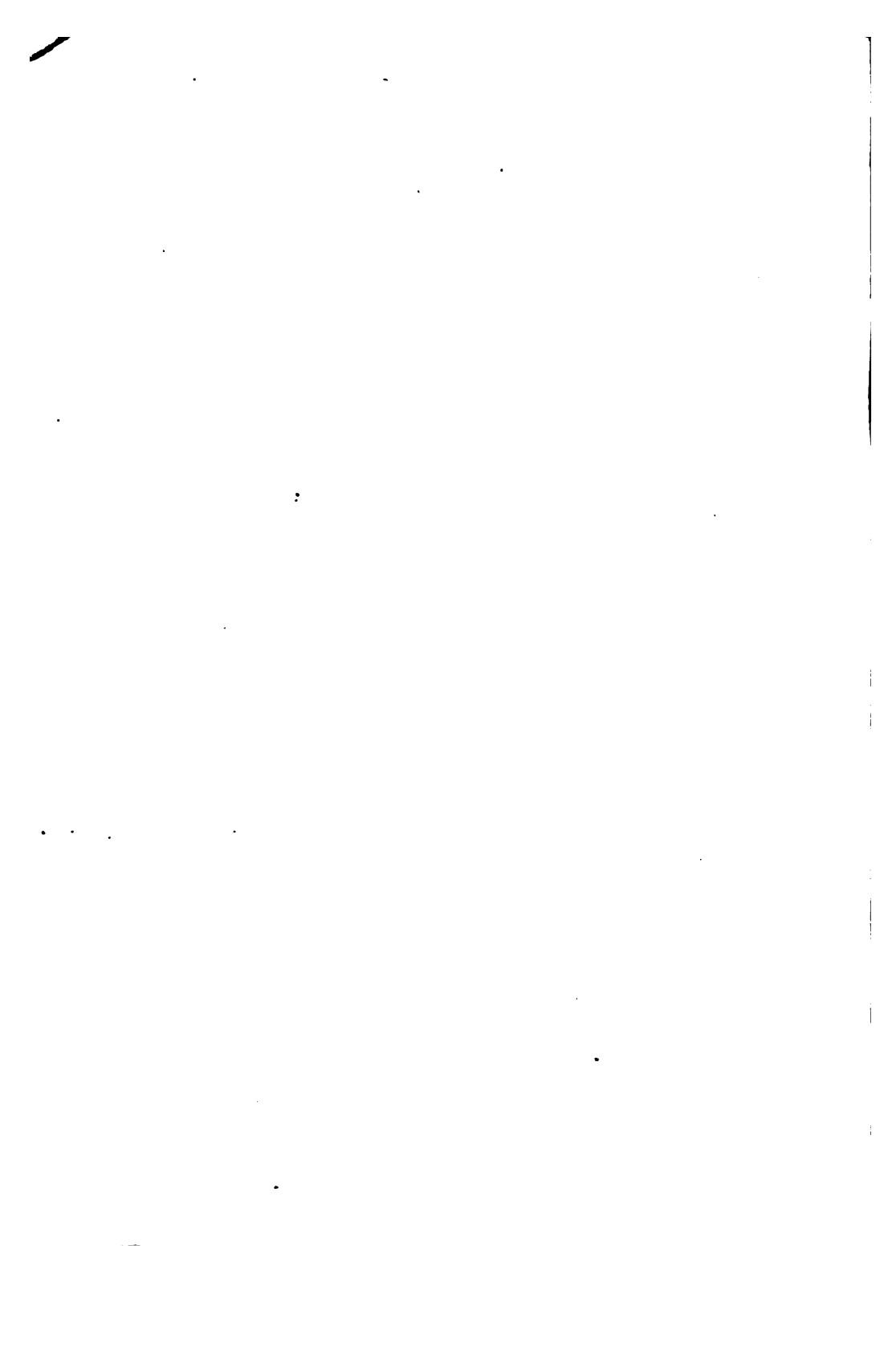
Reverting now, in conclusion, to the idea which originally suggested the train of thought to which your attention has been invited, and holding still the views which it has been my duty and my privilege to express elsewhere on the nature, limits, and office of the American college, and on the necessity of greatly enlarging the subjects and increasing the thoroughness of liberal education in this country, I enter upon the duties of my present position with the greater satisfaction at a time when a new school or department of scientific instruction is about to be inaugurated, because, if this school should be successful in helping to meet a great national necessity and in securing the confidence of religious and liberal-minded men, it will prepare the way for other special schools, in which Mathematics, Astronomy, Physics, Chemistry, Moral and Intellectual Philosophy, Philology, History, Political Science, National and International Law, Aesthetics, and the Principles and Art of Education will receive that exhaustive treatment which their practical importance in a system of national education demands. Then will Columbia College, with its associated special and professional schools, become a repository of universal truth, a dispenser of universal knowledge, and a contributor to the discovery of new laws of nature, and new and more beneficent applications of those laws to the advancement of human society. Then shall we more nearly realize the beautiful ideal sketched out by Milton, of "a complete and generous education," "by which to repair the ruins of our first parents, by regaining to know God aright, and out of that knowledge to love Him, to imitate Him, to be like Him as we may

the nearest, by possessing our souls of true virtue, which being united to the heavenly grace of faith, makes up the highest perfection." Then will the ingenuous youth of the land resort here, "inflamed with a love of learning and the admiration of virtue, stirred up with high hopes of living to be brave men and worthy patriots, dear to God and famous to all ages," zealously aiming thoroughly to equip themselves "to perform justly, skilfully, and magnanimously all the offices, both private and public, of peace and war."



APPENDIX.

THE RECEPTION.



THE RECEPTION.

THE Reception at the President's House, at the close of the Inaugural Services, was one of no ordinary interest. Many old friendships among the Sons of the College were renewed and quickened. Friends of religion and learning, men distinguished for their labors in literature, science, and art, and for their services as educators of youth, were heartily welcomed, exchanged friendly greetings, and animated each other to renewed efforts in the great work of Christian education, and the diffusion of true knowledge in our country and throughout the world.

Several impromptu addresses were made by distinguished gentlemen present, upon the call of Governor Fish, who presided.

The Rev. Dr. Cummings, President of the Wesleyan University, Middletown, Conn., spoke as follows:—

MR. PRESIDENT AND GENTLEMEN,— The call to respond, as a representative of other colleges, to the sentiment just given, comes to me unexpected, and would more appropriately be obeyed by one of greater experience and the head of an older college. The interest of kindred institutions, in this important and joyful occasion, is sufficiently indicated by the many congratulations offered, and the kind wishes expressed, for the success of the newly-inaugurated President of this venerable institution of learning.

It is one of the pleasing circumstances connected with such a day as this, that the best understanding and kindest feelings exist between all colleges. They were all founded with the same design, and they strive for the same object; yet in a noble competition in the use of their resources to elevate the race, they are moved by

no envy or illiberal rivalry. As the generous scholar rejoices that the thoughts he originates, once uttered, becomes the property of the world, so do the friends of each institution of learning rejoice in the general use of any means that may more efficiently promote the cause of sound learning and true piety. The prosperity of any one college is, in an important sense, a benefit to all. It stimulates their supporters to gain a higher standard of education, and furnish greater facilities for instruction. It is therefore a circumstance of interest and of gratifying significance that, mingled with the array of scholars and distinguished men specially and personally interested in this honored institution, are so many of the officers and friends of other colleges. All rejoice when they consider how great are the resources of wealth and intellect here consecrated to the cause of education, and are confident that, under the wise and able administration to which the affairs of the College are committed, they will be used to secure the advancement of learning, honor to our country, and the elevation of the race.

The ancient fame and power of Columbia College are too well known to need commendation. Her influence, in the early history of our country, in elevating the standard of education, has well been described as beneficial and wonderful. Her record is found in the history of our country. Within her halls have been trained scholars and statesmen distinguished for their erudition, their devotion to the cause of justice, liberty, and human rights, and illustrious in the annals of the good and the great. She has contributed her part in securing to our land the high state of civilization and civil and religious liberty it now enjoys.

Our colleges, as a part of our extended system of education, are the glory of our country, and from their very nature are identified with republican institutions. They teach practically the true doctrine of equality. In the distribution of their privileges and honors, wealth and family name are nothing, but merit alone gains pre-eminence. Columbia College, distinguished in the past for her loyalty and devotion to the true interests of the country, gives a new proof of her unchanged spirit in the selection of a president who has known sacrifice for patriotism, who, because he loved his country more than personal interests, left the scene of his labors and his unfinished plans, and removed to a distant State, where he could speak and act as a true man and a patriot.

Called to succeed noble and honored men in the high office of President of this ancient and honored Institution, the congratulations and sympathies of all friends of learning are with him, and their earnest prayer is, that ever-increasing prosperity may attend his administration.

President Cummings was followed by the Rev. Dr. Kerfoot, President of Trinity College, Hartford.

The response already made, Mr. Chairman and Gentlemen, by the Rev. President of the Wesleyan University to the courteous notice of the "Heads of other Colleges present," had, I thought, fulfilled *our* pleasant part in the congratulations to Columbia College, and in the welcome to your new President. But as I am called upon by name to add my word of salutation, I cannot for a moment hesitate to do so. Using the familiarity the occasion is prompting, I may be permitted to say, that though now my personal acquaintances here are no longer numerous, yet I am no stranger in this city and its vicinity. My youth and college days were passed not far from this; here I formed the closest ties of my life, and some of its dearest friendships; and here I laid up the treasure of early confidences and memories. Then, too, I am not an alien in the walls of old Columbia; for she made me one of her own Society, when, some years ago, she conferred on me the honor of the Doctorate in Divinity. Would that I could have merited it as much as I prized such an honor from such a source! So I feel at home here to-day, and my words of congratulation now may easily be very hearty ones.

And since this part and occasion in our pleasant day seem, by general consent, readily, and properly, too, to provoke and justify some egotism, I can best and most naturally utter my welcome to President Barnard, by saying, that his response, Mr. Chairman, to your official recognition of him in his new office, awakened in me a sympathy and an appreciation of his feelings that probably no other man present could have felt. There were some strange coincidences in our experiences. Not only had our work been the same in two different southern States,—the building up, by much toil and care, of a college of liberal Christian learning; not only had we wrought for years with hearty purpose among cordial and valued friends in those States, and had reared our edifices in substance and in reasonable hopes to a goodly height, but the very years of effort he num-

bered were the same with my own, and the sad cause of his interruption, three years ago, reached the same disappointing result with me, in the suspension of St. James's College this summer. Twenty years of full, and, for the time, *successful*, collegiate life and work, ending in the suspension, perhaps overthrow of such hopes as grew up in earnest hearts from so many years of loving work; the severance from dear old ties and noble-hearted friends,—and no latitude can furnish these more richly than the States in which Dr. Barnard and I have been working; a transfer in mature life to resume, among new scenes and associates, the work long ago began elsewhere in early manhood; to meet new friends and hopes, while the old ones are not, cannot be, forgotten,—I can well sympathize with your new President.

So can I in his earnest words about our dear old flag. It is pleasant to see it wave over us, fearless of insult or rivalry. We know what such a sight of that flag, safe from peril, means. Not that I have ever seen all in this way that Dr. Barnard saw. Maryland was always at heart fully loyal to the national cause, and she is coming out all right and true. God speed the time when that flag shall wave triumphantly and peacefully over our whole country! When the institutions of religion and learning, which the war has paralyzed, shall rise up again in new and enduring life and vigor, and when every American shall be loyal and obedient to the national authority, and to that God who has established that authority as His ordinance over us all in this land.*

From many letters which had been received by the Chairman of the Committee of Arrangements from Presidents of Colleges, and extracts from which were read, the following have been selected for insertion in this Narrative, with the omission of the introductions and conclusions.

From President Woolsey, of Yale College:—

"It will give me pleasure to be at President Barnard's inauguration next Monday, if I find it in my power. Whether it will be in my power depends in part on the time of the day at which it takes

* Chancellor Ferris, of the University of the City of New York, and President Webster, of the Free Academy, N. Y., were also present.

place. I can be in New York from about 1 o'clock until near 8 p. m., but my duties here will prevent me from being away from College at any other time."

From President Hill, of Harvard College:—

"I am very sorry that it is not in my power to be present at the approaching inauguration of Dr. Barnard. Many personal reasons make me desirous of being present, and assuring Columbia College of the friendly relations in which Harvard desires to stand toward her, but previous engagements render it impracticable."

From Vice-President Hickok, of Union College:—

"The communication from the Committee of the Board of Trustees of Columbia College, dated the 15th inst., conveying the friendly greeting to this sister College, and an invitation that I attend at the inauguration of their President on the 3d day of October next, has been duly received, and I would return a grateful acknowledgment of the kindness and courtesy therein manifested.

"It would be a pleasure to be able to comply with the invitation, and I truly regret to be obliged to say that engagements here will necessarily prevent my attendance. In behalf of this College I cordially reciprocate the respect and good will from Columbia, and sincerely pray that the coming occasion may be highly auspicious, and the presidential inauguration eventuate in her increased prosperity and the enlargement of the cause of literature and science."

From President Fisher, of Hamilton College:—

"Permit me, through you, to thank the Committee of Arrangements for the honor of an invitation to the inauguration of Rev. Dr. Barnard, as President of Columbia College. The occasion, I doubt not, will be one of deep interest to all interested in the higher educational institutions of the State. I regret that official engagements compel me to forego the pleasure of being present with you. Columbia College, under the wise presidency of so accomplished a scholar and educator, will not only maintain her ancient renown, but advance, with our advancing country, in the work of affording facilities for an enlarged education, until the universities of this New World shall surpass those of the Old, as much as our lakes and rivers and cataracts surpass theirs."

From President Hopkins, of Williams College :—

“ I should be much gratified to accept the invitation by which I am honored, to attend the coming inauguration of the President-elect of Columbia College, if it were in my power. Unfortunately it comes at the same time with the meeting of the American Board of Missions, which I am required to attend. I trust the occasion may be a happy one, and wish great success to the new President.”

From President M'Lean, of the College of New Jersey, Princeton :—

“ It would give me very great pleasure to accept the invitation of your Committee of Arrangements, to be present at the inauguration of the Rev. Dr. Barnard as President of Columbia College; and, until to-day, I hoped it would be in my power to do so. But I find that my engagements at home, on the 3d instant, will deprive me of the pleasure of being with you on that interesting occasion. With the best wishes for the continued prosperity and usefulness of your venerable and distinguished institution.”

From President Smith, of Dartmouth College :—

“ Your communication of the 15th inst., inviting me to be present at the inauguration of the Rev. Dr. Barnard, as President of Columbia College, has just reached me. I hasten to reciprocate, on behalf of Dartmouth College, the greetings of her elder sister, and to congratulate you on the auspicious occasion to which you are looking forward. It is gratifying to all the friends of learning, that the vacancy caused by the resignation of your late distinguished President, is to be so soon and so worthily filled.

“ I am sorry to say, however, that I shall be unable to comply with your courteous invitation. Public engagements of an imperative character will forbid. I the more regret this, as my long residence in the city of New York gave me special opportunity to see what service Columbia College has rendered to the cause of science and letters, and to appreciate, I may add, the elevating *general* influence of such an institution in the midst of a great commercial metropolis. May the divine blessing be largely vouchsafed to the President-elect, and to the venerable College over which he is to preside.”

From the Rt. Rev. Bishop Odenheimer, President of Burlington College, N. J.: —

I have to thank you, and through you the Committee of Arrangements, for the honor of an invitation to be present at the inauguration of the distinguished gentleman who has been chosen as the tenth President of Columbia College.

I sincerely regret that official duty, in my diocese, will deprive me of the pleasure of being present on an occasion as auspicious for the interests of academical culture in general, as it is in its bearing on the prosperity of your venerable and illustrious institution.

From President Bourns, of Norwich University, Vermont: —

I have had the honor to receive a letter from the Committee of Arrangements of Columbia College, an invitation to attend at the inauguration of Dr. Barnard, as President, on Monday next. I regret extremely that my double duties here, in which I am now, in our term time, engaged, will prevent my being present with you on that occasion.

It would give me very great pleasure to have opportunity of paying my humble tribute of respect to your noble old institution, and also personally to your new President, and to assure him of my warm sympathy and sincere desire for his success in the arduous and important position to which he has been called; all minor institutions of learning, indeed the whole educated community, and those interested in education, must, I feel, be affected for good or ill by the condition of an institution so prominent and influential as Columbia.

From President Loomis, of Allegheny College, Penn.: —

In the name of Allegheny College I would reciprocate the kindly greetings of Columbia College, and hereby express my regrets that prior engagements will prevent my presence at the inauguration of Dr. Barnard.

I would congratulate Dr. Barnard on being called to the Presidency of one of the oldest and best of the sisterhood of colleges, and would congratulate the College on having as its President Dr. Barnard.

From President Anderson, of Rochester University : —

The note inviting me to attend the inauguration of President Barnard, was, through no fault of yours, kept from my hand until too late to enable me to accept it by letter or to attend in person. I regret this very much, as it would have given me great pleasure to have joined with you in the ceremonies connected with giving a new head to the venerable institution which you represent. Please accept my thanks for your politeness in sending me this invitation, and the assurance of my most earnest wishes for the highest success of an administration of your College begun under such favorable auspices, and by a gentleman of such high ability as Dr. Barnard.

From President De Koven, of Racine College, Wis. : —

The polite invitation of the Committee of the Trustees of Columbia College I have duly received. I regret very much that the approaching examinations and Commencement here will deprive me of the pleasure of being present on the occasion.

Permit me to offer my congratulations, and those of the College over which I preside, to my own Alma Mater on this the inauguration of her tenth President.

Letters were received, also, from the following Presidents, expressing their regrets at their inability to accept the invitation of the Committee: Johnson, of Dickenson College; Woods, of Bowdoin College; Jackson, of Hobart College; Goodwin, of the University of Pennsylvania; Gerhart, of Franklin and Marshall College; and Torrey, of the University of Vermont.

James W. Gerard, Esq., LL. D., an Alumnus of the College of the Class of 1811, responded to a call from the Chair, in part as follows: —

I am very happy on this bright day, on this intellectual and festive occasion, to meet in the halls of our Alma Mater so many of the early friends of my youth, whom time and circumstances have separated, but who, now in the full day of our manhood, meet to reciprocate, not the mere compliments of the occasion, but to express

our heartfelt congratulations at meeting each other at this interesting ceremonial.

Many years have rolled by since I acquired, at the feet of the learned Gamaliels who then dispensed their stores of learning in the class-rooms of this College, those elements of instruction and lessons of wisdom which form the character and prepare the student to go out in the world and fight, with hope of victory, the great battle of life, but which, however, the sad experience of the graduate shows, has its defeats as well as victories. When we take our first degree and start upon the race of life, how few arrive at the goal foremost in the strife! Many stumble on the course and fall by the wayside; others strive beyond their strength to go ahead, but soon, panting for breath, give out ere the course is half run. Some favored few gain the prizes in life, but many are distanced. When I look back upon my contemporaries, and seek for them now, how few shining lights are to be seen among them! The greater part have gone to an early grave; blighted hopes, disappointed ambition, and the world's neglect, have broken the spirit of many a bright youth whose budding genius gave rich promise of success; while, on the other hand, the prize has been gained by many a one who gave no early promise in the race, but who, by steady gait, has kept on the even tenor of his way. Truly the race is not to the swift, nor the battle to the strong.

But I came not here to preach, for I am surrounded by a galaxy of reverend divines whose high prerogative and duty it is to point the moral from the past, and to enforce those lessons of wisdom on human life which experience and observation suggest.

Around this festive board, that groans with the good things of the season, I delight to hear the ring of merry laughter from learned scholars, professors, and divines, from the man who is in the middle of life, and the young Alumnus who is beginning it; for there is a time to play as well as preach. I like to see the clergy, who witness enough of the ills and sorrows of life, cast away, for a brief season, the sober hue of thought from their solemn countenances, relax in festivity from the gravity of their profession, and mingle in the little social pleasantries which give to life its occasional zest; and I congratulate them that — this being *Monday*, and not *Saturday* — they may enjoy this holiday, and, in one sense, have no care for the morrow.

But, Gentlemen Trustees, I think, in the exercises of the day, there has been an hiatus in the ceremonies, which I beg leave, in some small degree, to fill up. While we have been paying our adoration to the rising, we have lost sight of the setting sun. No, gentlemen, I take that back. The sun of the late President CHARLES KING is now at its meridian; bright and unclouded, and far distant be the day when his sun shall set. If I had the power of Joshua, I should even stop the wheel of Time and arrest the sun in his course, provided thereby I did not come in collision with Science. The late President is now as bright and buoyant in spirit, as full of energy, intellectual vigor, and young blood, as he was when first he took upon himself the burdens and the duties of the presidency of this flourishing institution. With sagacity and forethought his far-seeing eye saw that mammon was encroaching upon the sacred shades of the old consecrated college-grounds, and that the royal elms, which for so many decades had cast their shade upon the successive classes of students,— who, like the waves of the sea, chased each other before them,— would soon be cut down to make way for the marble palaces of trade which were to supplant them, and that the “woodman” could no longer “spare the tree.” He looked around for a new home for his respected Alma Mater and her numerous children, and with the anticipation of working miracles in his new location, he pitched upon this secluded spot, where, from its halls that never were vocal before with the human voice, he determined to make the *deaf* to hear and the *dumb* to speak; and he has wrought, doubtless, many miracles on the young gentlemen committed to his charge. They, indeed, must miss him; for while he had the faculty of commanding their respect and obedience during the jurisdictional hours of study, he knew full well that boys were boys, and he remembered that he had been a boy himself,— I might almost say was now,— and sympathized with their pleasures. In any new duty to which he may be called, he carries with him the esteem of professors, alumni, and students, and of all who know him; and may his way through life be long and straight, and strewn with flowers, and may there be no thorns among the roses that still lie in his path.

I deem it fitting, Gentlemen Trustees, that I should embrace this opportunity to return my acknowledgments to my Alma Mater, for the unexpected honor she has lately conferred on me, by

granting me the degree of *Legum Doctor*, commonly called LL. D. Whether I am learned in the law, it is not for me to say. That I have *taken in* a good deal of law in my time, and let a good deal *out*, all know who know me; and the greater I deem the compliment conferred on me by this College, for it, of all existing institutions, found out my modest merits, when the world was generally quite blind to them. I was on the banks of the Seine during the summer of the past year, enjoying the pleasures and excitements of the great French capital, moderately, when a letter missive from my esteemed friend, the late President, announced to me the honor that had been conferred on me, at which my better half was much delighted, believing that I had letters-patent for "being skilled in all the learning of the Egyptians."

But on my return to my country no one called or addressed me as *Doctor*, (although my good old friend, Dr. Francis, did, before I had the honor,) and, in reality, I had forgotten my degree and its dignity, when, about three months since, I received a letter through the mail, from Long Island, in a fair female hand, adding, after my name, the mystic letters LL. D. I wondered by what miracle the fame of my new degree had reached that distant region. On opening it I found an invitation from a young lady, requesting me to be present on an exhibition of a public school for girls, in the back part of Brooklyn. Of course the LL. D. could not refuse the invitation, and I was present at a very charming exhibition of their educational exercises by some five hundred intelligent girls; and that is the only time that I have ever been recognized in the community as a learned Doctor.

Allow me, gentlemen, to digress a little from the particular object with which I arose to address you, and to ask of you a kind word, which this incident suggests, for the prosperity of that great institution, the Public Schools of our city,—connected as they are with education, and the preparation of many young men for entering this and other neighboring colleges. It may be that many gentlemen present are not familiar with the great extent and practical influence of the system, and it may be that many of you have never darkened the door of a public school. To such, a few words from me, explaining the great objects and results of the system, may not be inappropriate or uninteresting.

By the magnificent provision of the laws of the State for the

erection and support of the public schools of this city, there is annually raised, by tax on the citizens, about a million and a half of dollars, with which lots are purchased, extensive, commodious, and comfortable buildings are erected, which are an ornament to the streets in which they are built, whose portals are daily opened to the children of both sexes, of all nationalities, and of every station in life, without charge, without stint, without any form of admission; whether native or foreign born, whether Jew or Gentile, Catholic or Protestant; whether they come from the banks of the Rhine or the Liffy, the Danube or the Po; whether they are rich or whether they are poor; whether they are clothed in purple and fine linen or in rags, admission is free to all, and all are received with kindness. Thousands and tens of thousands of such children may be daily seen wending their way through every street in the city to their ward school, with their books under their arms, with quick, elastic step and smiling face, as if they had well prepared the studies of the day, and as if the school-house was to them — and which it is really made by the beautiful system of gentle discipline which governs — a happy home. As the clock strikes nine, in more than a hundred of these stately buildings, from the Battery to Kingsbridge, from the East to the North River, nearly one hundred thousand children, such as I have described, with attentive and respectful reverence, listen to a portion of the Scriptures read to them by their principals, then clasp their hands in open prayer, (and many never prayed before,) and a hundred thousand voices are afterwards raised in a hymn of praise to the God of all nations, all kindred, and all tongues, — a beautiful preparation for the work of the day, not only to the children, but to their teachers and school officers and friends who are present.

In these schools, under the instruction of able teachers, (four fifths of whom are young ladies of the most approved education, morals, and manners,) these masses of thousands and tens of thousands receive the elements of a thorough English education, which is useful to them for any position in life to which they may be called. But it is not only the intellect that is cultivated; the heart and the *morale* are not neglected. A quiet and gentle discipline governs these masses, or, rather, by self-discipline the children govern themselves. Every girl and boy know their duties, and what is expected from them. These duties are not enforced by a stringent or noisy

discipline, but the commands of their teachers are communicated by a gentle look, or the striking of a little bell, or the touching of a note on the piano. Military evolutions for the boys, and calisthenics for the girls, accompanied by the lively music of the piano, give ease and character to their movements, and the chorus of the merry song which rings through the building, would cause a stranger to suppose that it was a place of amusement, rather than an educational establishment. But let him go into the class-room and see the energy and rivalry with which they recite their lessons, the quickness and intelligence with which they answer questions in arithmetic, geography, history, astronomy, &c., and the admirable order of the class, and he will imagine that the teacher has some magic spell by which so many discordant elements are reduced to harmony. Especially will a visitor be struck with the material of which the schools are composed on the river margins of our city. He will there see masses of children of the laboring classes, of the poorer operatives, of all nations,—brands snatched from the burning,—many of whom come from miserable homes to the happy influences of their young teachers.

For fourteen years I have been intimately connected with the public schools of the city, for the first ten having been a school officer of the 18th Ward; but, about four years ago, the *politicians* of that ward thought proper to take the election of school officers into their hands, and as I was not a politician myself, they elected their political friends. But I did not discontinue my interest in and visits to the schools of my ward, and those of the city at large, to which I am daily invited; so that I may say, that for fourteen years hardly a day has passed, for the greater part of the year, that I have not seen five hundred or a thousand of the young people of this city, and in brief addresses and examinations have endeavored to improve their intellectual and moral condition.

The public schools have also their college; and seven to eight hundred young men, selected from the different grammar-schools, are admitted to the Free Academy, (the people's college,) where the lustre of many a rough diamond is brought out by the skill of its learned professors.

I can assure those gentlemen who have never visited any of our public schools, that they will be amply repaid for any trouble or time it may cost them in so doing, and that they will find there

much subject for hopeful contemplation in the rising generation of our great city; and they will not think the heavy sum annually expended for their support a misappropriation of the people's money.

The Rev. Dr. Hicks, of the class of 1823, responded to a call from the Chair as follows: —

I thank the Chairman for the honor he has done me. I have always cherished a deep interest in old Columbia, and have come three hundred miles, with no little personal inconvenience and expense, to attend these services. But, sir, the occasion awakens painful as well as pleasurable emotions. I find myself a stranger here. My collegiate life was spent within other walls, which no longer exist except in memory. How many hallowed associations cluster around that dear old building in Park Place! I well remember the sadness that came over me, and the tear that I could not restrain, when, on a visit to this city from my distant home, I passed its ruins, and saw the workmen removing the last stones of its foundation. Among the recollections of departed associates and friends, none is more vivid than that of our venerable President, the Rev. Dr. Harris, whose memory we all delight to honor. If I have had any success in my profession, I hold myself indebted for it chiefly to the training which I received in Columbia College; and to no one of its able faculty do I owe a greater debt of gratitude than to my faithful friend, the reverend Professor of Rhetoric and Belles-Lettres, whom I am most happy to see present with us to-day. I give the health of the Rev. Professor McVickar. May many years be yet added to his long and honored life.

Professor McVickar responded as follows: —

Thus called on, Mr. Chairman, by one of my now silver-haired "boys," and on such a festive occasion, I cannot choose but answer, as best I may. In truth, such obedience to a college call has become part of my very nature. It began in boyhood, sixty-four years ago, when my Alma Mater first called me to answer as her "student"; that obedience ripening into a higher duty when, seventeen years after, she called me, young as I was, to speak and answer as her "professor"; and thus, through a long life of academic duty, even to my seventy-eighth year, has not only her word been to me

law, but her name and fame have been often on my lips, and always, I may say, in my heart, and my words, however feeble, always at her call and service; so that it forms now, I may say, a portion of my very "personal identity" to feel myself as part and parcel of Columbia College, and answer to the name of "Professor"; and I owe it to the recent liberal kindness of the Trustees, that, in relieving me of its active duties, I am still permitted to claim its quiet honors, and respond to the title of Professor McVickar. What Lord Nelson affirmed of his ship, I might almost anticipate of my College, namely, that its name would be found by the doctors, after death, visibly engraved on the heart.

As touching Columbia College, there are few who have known her so long or loved her better, and none who can now feel bound to her by so many ties of early remembrance,—our baptismal names, so to speak, are of the same date, 1787. Born within sound of her college-bell, nurtured and trained almost within the shadow of her honored walls, my classical preparation was yet, through foreign scholarship, fitting me for entrance before my thirteenth year.

I entered, then, the most youthful of all her students, and graduated, accordingly, after four years, the youngest of her sons. That long looked-for Commencement-day stands marked in my memory. Gen. Alexander Hamilton, the pride and boast of our Alma Mater, had just fallen in the field of mistaken honor.* The stage, draped in black, gave evidence of our sense of loss. His two sons, college students, the eldest my classmate,—one of the graduating class,—brought the event doubly home to my feelings, already deeply excited by my own duty of opening the services of the day by a Latin salutatory,—then the highest honor,—whose prescribed subject was "Eloquence," and its choicest illustration HAMILTON,—the earliest eulogium, it comforts me to think, delivered after his death, and by the youngest of his reverential admirers, and in the halls of his own College.

Thirteen years after my graduation I was called as successor to the Rev. Professor Bowden, in his various college duties, with little

* An appeal which his heart and conscience rejected, but wanted strength to resist. A doubter in his youth, under the influence of French infidel companions in the camp, but in his closing hours returning to his early faith, a sincere and humble believer.

of preparation beyond faith in my early training and favorite maxim, "*Perseverantia omnia vincit.*" Of our College professors I was the first "native-born," as well as the first among her own sons called to that honor; so youthful, indeed, was my appearance, that my first greeting at the College Board — from old Dr. Wilson, its presiding officer — was, "Pray, Mr. McVickar, how old are you?" To which query I was happily able to reply, (having a few days before completed my thirtieth year,) "Oh, Doctor, between thirty and forty," — a margin of age that raised me visibly in his good opinion. "Oh," said he, "I did not take you to be so old." *

And now, Mr. Chairman, to turn to the present time and scene before me, I here look around on the sons and grandsons of those once my companions, and with pride behold so many of them adding reputation and strength to our common Alma Mater; and the thought often crosses my mind, What a battalion of strength I might summon to her side, could I with trumpet-call gather from every corner of our land, and every class of honor in it, all who, for the past half century, have been to me as pupils and as sons! What a gallant host it would be, Mr. Chairman, to speak in her favor and to battle for her cause!

But to conclude my "old-world" story. Among the sons I see before me, I mark the earliest-born of my College life; one graduating with all its honors, unquestioned head of the first class which passed from my hands; one, even in early life, so eminent in a department owing nothing to me, (I mean the higher mathematics,) that within a few years he was called to the professor's chair of the same, and there adding largely to its reputation, not only at home, but abroad; which last I speak boldly, on the authority of the eminent Bowditch, who named him to me as the acutest and ablest analyst in our country. I therefore, Mr. Chairman, give you the health of Professor HENRY J. ANDERSON, the oldest of my College sons, — for years our College's learned Professor, and now one of our honored Trustees.

* Professor McVickar took his degree of A. B. in 1804; was elected Professor of Moral and Intellectual Philosophy, Rhetoric, and Belles-Lettres, &c., in 1817; and filled the Chair from that time to the year 1857, when he resigned it, and was made Professor of the Evidences of Natural and Revealed Religion. From this Chair he retired in 1864, and was made Emeritus Professor of the Evidences of Christianity. He received from the College the Honorary Degree of S. T. D. in 1825.

The Rev. Dr. Montgomery, being called upon to respond on behalf of the clergy, spoke in substance as follows:—

MR. CHAIRMAN,—It gives me great pleasure to respond to your kind summons, and to utter a few words, by way of contribution from the clerical order — always the friends of learning and the promoters of sound education — to this genial and interesting occasion. Although an alumnus of a sister institution of no mean celebrity, — the University of Pennsylvania, — yet as a resident of New York, as well as an ardent lover of classical literature, I am rejoiced at every fresh token of the fame of COLUMBIA. Year after year I have watched, with increasing interest, the lengthening roll of her distinguished sons, and have always entertained the deep conviction that she had a great and beneficent mission to fulfil in the metropolis where she has been so long known and so highly esteemed. Surely we are entitled to expect the noblest results from a college so richly endowed, so advantageously situated, and of such a continental fame.

Is it too much to ask that, through the combined efforts of her professors, alumni, and trustees, our venerable College shall become, in the strictest sense of the word, an University, where every branch of scientific studies shall be pursued, and where languages, philosophy, history and physics, mathematics and jurisprudence, shall all be crowned and consecrated by religion? Colleges, sir, should aim at being not only seats of learning, but seminaries of virtue, from whose classic halls, every year, should go forth a noble band of young men fitted to become useful and honored citizens of the Republic.

I am sure that we were all delighted with one particular feature of the Inaugural Address of our new President. We all responded to his sentiment, that the duty of loyalty to the Government was only second to the allegiance that we owe to our God. Sir, from my very heart I can echo that just and noble assertion. And where, let me ask, can we most naturally look for this sacred principle of patriotism, — especially in these times of sore trial to our beloved country, — save to these very precincts, where COLUMBIA (never did the name seem more appropriate than now) is training so many of the future citizens and statesmen of the nation in those liberal studies which tend so strongly to the formation of a true-hearted manhood?

Sir, in this connection, let me attempt to supply an omission which has hitherto characterized our festal proceedings. Upon such a day in the history of Columbia nothing that distinguishes her should be forgotten. We have listened with reverential admiration to the encomiums pronounced upon the honored dead who, in one or other of various official trusts, have been associated with our institution of learning. We have joined in the eulogies that have been bestowed upon the living professors. But, as yet, we have forgotten to make special mention of those students of Columbia, who, in their earliest manhood, have so loved their native land, that, leaving behind them these classic halls, and all their familiar associations, they have assumed the harness of the warrior, and, hastening to the field of fearful strife, have generously imperilled their lives in the service of the afflicted Republic. Sir, we give these noble young men our heartiest thanks for their patriotic devotion; and our gratitude is increased by the conviction that, through their self-sacrifice and courage, they have shed an abiding lustre upon their Alma Mater.

It was under *her* training that these true-hearted champions of the RIGHT have gone forth to the battle that is waging for the nation's integrity and life; and as we have watched them enduring the toil and facing the danger of the conflict, we have been animated with a still firmer faith that the righteous cause would triumph, the national honor be vindicated, and this unholy rebellion be forever crushed. God in his infinite mercy hasten the glorious consummation! and, hereafter, when we meet in the happier days of restored union and peace, we will delight in inscribing, among the foremost on our College rolls of distinction, these *soldier-students* of COLUMBIA.

And now, Mr. Chairman, I will detain the company no longer, save to express our grateful sense of the abundant hospitality to which, as has been already humorously hinted, my clerical brethren and myself have done such ample justice, by proposing, as a concluding sentiment of thanks to those to whom we are indebted for the entertainment, the health and happiness of their distinguished representative, the gentleman who so worthily occupies the Presidency of the Board of Trustees, the Hon. HAMILTON FISH.

The following letters were received from Alumni of the College.

From the Rt. Rev. Dr. Whitehouse, Bishop of Illinois :—

I received, only last evening, the invitation of the Committee of Arrangements to be present at the inauguration of the tenth President of Columbia College.

I deeply love and honor my Alma Mater; and she has perpetuated with intenser interest every feeling of my personal life, by the education of my four sons in her venerated halls.

It is, however, impossible for me, on such short notice, to secure the high indulgence of being present on the occasion, especially as the annual meeting of the "Board of Missions" takes place on Tuesday, in Cleveland.

I am compelled, therefore, to content myself with the expression of the heartiest interest in this event, as well as all that concerns the honor and usefulness of the institution.

I am assured that the Presidency of Dr. Barnard, whom I have long known and admired in his public career, will eminently contribute to secure both.

From the Hon. W. B. Lawrence, of Rhode Island :—

I delayed replying to your note of the 15th instant, in the hope of being able to be present, on Monday next, at the inauguration of the Rev. Dr. Barnard, as the tenth President of Columbia College, and thereby evince my respect for my Alma Mater. I could, however, have scarcely expected to meet many of those who, with me, received, forty-six years ago, the honors of the institution. One name I do recognize, among the members of the Committee, as that of a friend of my boyhood; who, during a four years' course, maintained a superiority that no one of his classmates ever attempted to question.* There is, moreover, in the Academic Board a professor who received his appointment during my junior year. To the Rev. Dr. McVickar's instruction in subjects which have since constituted my special studies, I feel under the greatest obligations.

I thank you for the courtesy of your invitation, of which I regret my inability to avail myself.

Letters of regret for their inability to attend were received from the Rt. Rev. Dr. Kemper, the venerable Bishop of Wis-

* Dr. Henry J. Anderson.

consin ; Frederick Philipse, Esq.; W. Walton, D. D.; H. Nicoll, Esq.; J. Lenox, Esq.; R. Suckley, Esq., Alumni.

The Alumni of the College were very largely represented. It is proper to record the names of the elder graduates who testified their affection and regard for their Alma Mater by their attendance. As it was difficult to obtain the names of all who were present, it is probable that some may be omitted. The list of those whose attendance was noted—other than members of the Board of Trustees, and of the Faculties and Officers of the College—is as follows: the Hon. Gulian C. Verplanck, LL.D., Class of 1801; Hon. Gouverneur Kemble, Class of 1803; William E. Dunscomb, C. L., Class of 1806; Hon. Hugh Maxwell, A. M., Class of 1808; John Brown, S. T. D., Class of 1811; James W. Gerard, LL. D., Class of 1811; William L. Johnson, S. T. D., Class of 1819; Gabriel P. Dissosway, A. M., Class of 1819; Samuel R. Johnson, S. T. D., Class of 1820; George H. Fisher, S. T. D., Class of 1821; Adrian H. Muller, Class of 1822; John A. Hicks, D. D., Class of 1823; Alexander S. Leonard, S. T. D., Class of 1825; Prof. William H. Crosby, Class of 1827; George Ireland, C. L., Class of 1830; James W. Beekman, A. M., Class of 1834; Evert A. Duyckinck, A. M., Class of 1835; William H. Wilson, A. M., Class of 1835; John M. Knox, A. M., Class of 1838; Rev. William A. McVickar, A. M., Class of 1846; Charles A. Silliman, A. M., Class of 1850.

And the following Alumni, who represented the Standing Committee of the Alumni Association: Frederick De Peyster, A. M., Class of 1816; Mancer M. Backus, A. M., Class of 1838; George P. Quackenbos, A. M., Class of 1843; Jeremiah Loder, A. M., Class of 1846; Rev. William G. Farrington, A. M., Class of 1853; John Crosby Brown, A. M., Class of 1859; Eugene H. Pomeroy, A. M., Class of 1860; Gratz Nathan, A. M., Class of 1861; Emile Lacombe, A. B., Class of 1863. A. S. Van Duzer, A. M., Class of 1853, Secretary of the Alumni Association.

The following letters were received from gentlemen interested in education, who had been invited to honor the occasion by their presence.

From the Hon. William H. Seward, Secretary of State:—

I give you my sincere thanks for your kind invitation to the inauguration of the Rev. Dr. Barnard into the office of President of Columbia College.

Holding that institution in affectionate reverence, and highly esteeming the distinguished gentleman who is to be charged with its conduct, it would afford me very great pleasure to accept your invitation. But I am beset here with daily cares that render the indulgence impossible.

From Admiral W. B. Shubrick:—

I have the honor to acknowledge the receipt of an invitation, from the Trustees of Columbia College, to be present at the inauguration of the Rev. F. A. P. Barnard, as President of that venerable institution.

It causes me great regret that official engagements forbid my accepting this invitation, and that I am prevented from offering in person, to the Trustees, my congratulations on the occasion of their obtaining the services of so learned and eloquent a gentleman; one so worthy to succeed the illustrious Presidents who have given so high a character to Columbia College.

From J. E. Hilyard, Esq., of the Coast Survey:—

It is with great regret that I am obliged, by pressing official duties, to deny myself the pleasure of being present at the inauguration of Dr. Barnard, in compliance with the invitation I have had the honor of receiving.

As a friend and recent associate of Dr. Barnard's, and entertaining for him the warmest personal regard, the occasion would be doubly interesting to me. May your time-honored institution continue to prosper under its new administration.

From Prof. B. Silliman, (since deceased):—

I have been honored by the receipt of your circular of Septem-

ber 15th, inviting me to be present at the inauguration of the Rev. F. A. P. Barnard, D. D., LL. D., as President of Columbia College.

I have to regret that it will not be in my power to attend on that interesting occasion; but I remember with pleasure that Columbia College derived its first President, the Rev. Samuel Johnson, from Connecticut, and his son, the late illustrious Samuel William Johnson, after one interregnum, succeeded to the same office. He was still a bright luminary, even in old age, when I was favored by an interview with him in his retirement in Stratford; and your President elect, as well as the two Presidents Johnson, is an alumnus of Yale.

We view with pleasure the increasing prosperity and fame of Columbia College, among whose alumni are found not a few names illustrious in the annals of our country.

From Horace Binney, Jr., Esq., of Philadelphia:—

I received, yesterday, your Committee's kind note, dated 15th inst., inviting me to attend the inauguration of Rev. Dr. Barnard, as President of Columbia College.

Few things would give me greater pleasure than to take part in doing honor to my dear friend, and classmate of forty years' standing, the President elect, by my attendance on the occasion of his instalment; but having just returned to my office after a protracted absence, I find it not to be in my power to be absent on Monday next.

I thank you for your kind invitation. Please accept my felicitations to the College on the choice which they have made of a most worthy and accomplished head.

From Edmund Blunt, Esq., of Brooklyn:—

I regret that I shall be unable to attend the inauguration of the Rev. Dr. Barnard as President of Columbia College, as I am obliged to be absent from the city for some days. As a friend to religion and learning, I feel pleased at the bright prospects of an institution that has graduated, and will, I hope, continue to graduate her full share of Christian gentlemen.

From Major-General Silas Casey, U. S. A.:—

I have the honor to acknowledge the receipt of your invitation

to the inauguration of Rev. F. A. P. Barnard, D. D., LL. D., &c. Please accept my thanks for the invitation, of which, however, it will be impossible for me to take advantage.

I regret the more my inability to attend, on account of the friendship which I bear Dr. Barnard personally, as well as the respect with which I regard him as a Christian gentleman and a scholar of profound attainments.

From Rear-Admiral C. H. Davis, United States Navy:—

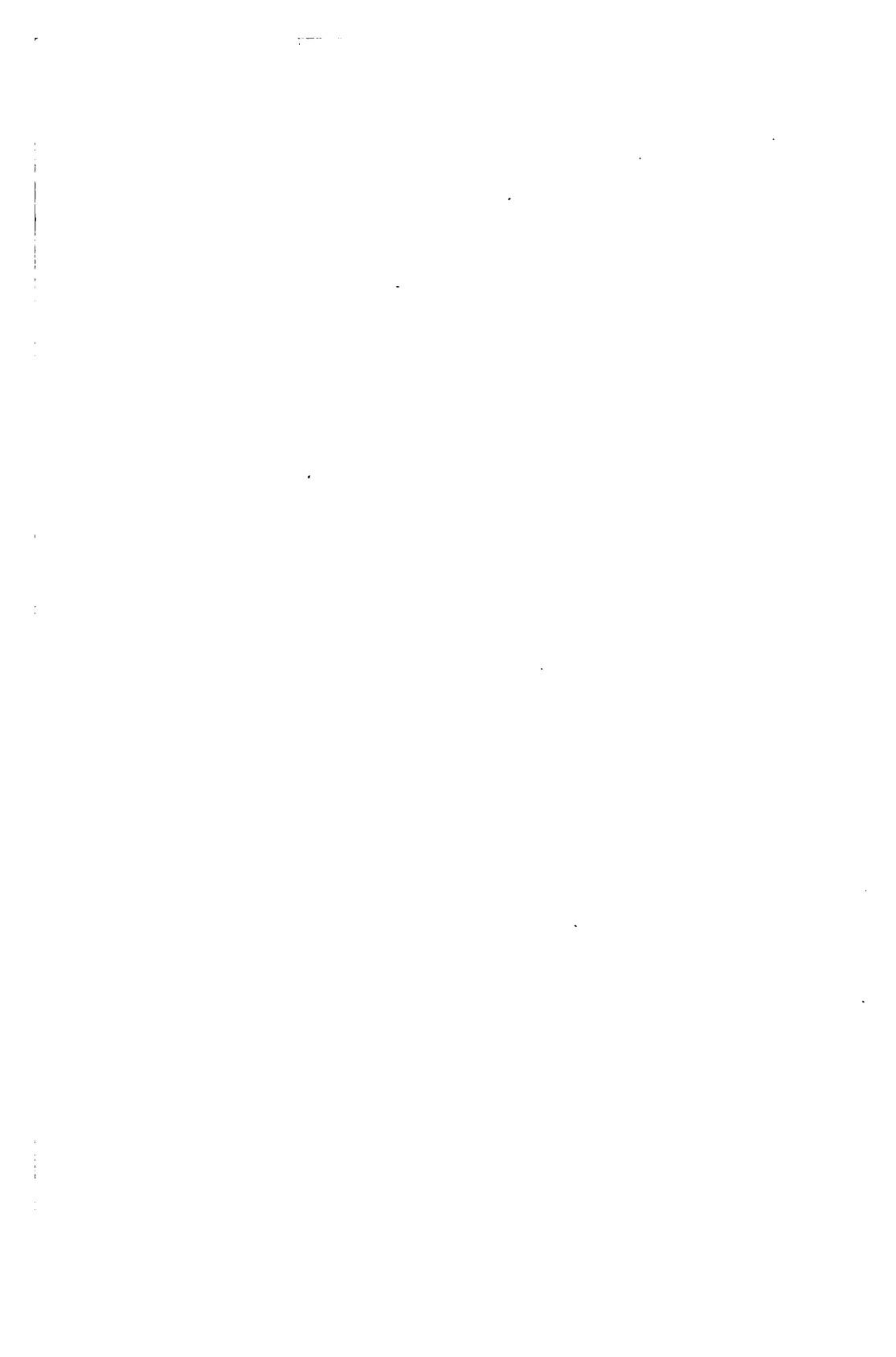
I was in Cambridge when your invitation of September 15th, to be present at the inauguration of my friend, Rev. Dr. Barnard, as President of Columbia College, reached Washington. I regret exceedingly that I could not have the pleasure of being present at this interesting ceremony. I have many agreeable associations with the College, formed when it occupied its old site, at the foot of Park Place. They carry me back as far as the time when the Chair of the Greek Professorship was filled by Dr. Moore, in whose house I was a constant and intimate visitor, and through whom I became acquainted with Dr. McVickar, and other eminent gentlemen connected with the institution.

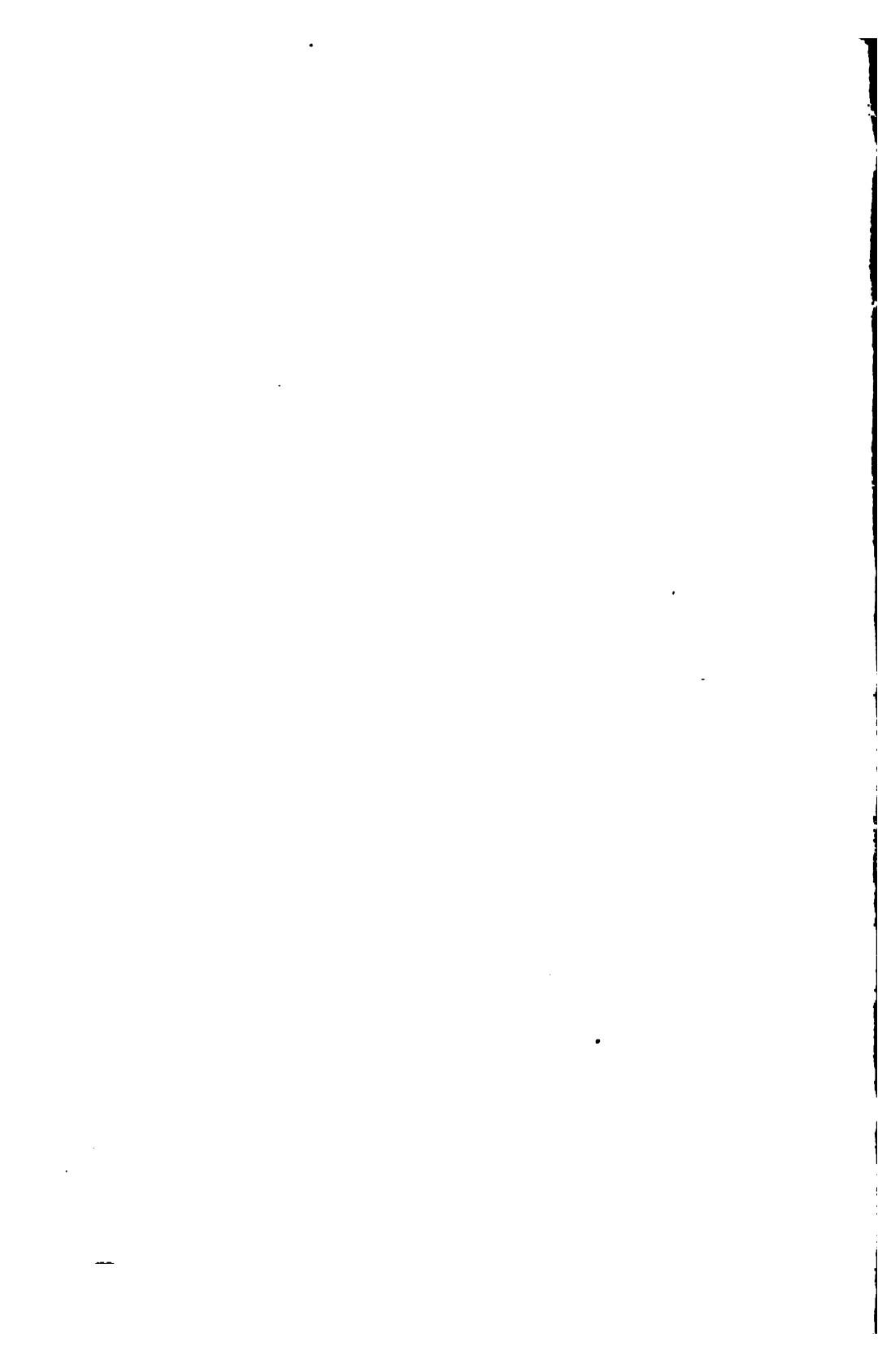
I return your greetings with cordiality. The rebellion has rather strengthened than diminished my desire to extend the limits of scientific and classical education in our own country, and thus to give our society that which, through its recent and peculiar constitution, it must necessarily stand in some measure in need of,—the highest refinement, culture, and polish.

Letters regretting their inability to attend were received from the following gentlemen: His Honor the Mayor; George W. Blunt, Esq.; Prof. Graeff W. Barton; J. W. Gilliss, Esq.; Major-General J. G. Barnard, U. S. A.; Lieut.-Governor D. R. Floyd Jones; Prof. James D. Dana; Rev. D. V. McLean; J. Ferguson, Esq., National Observatory; Richard Irvin, President of St. Andrews Society; Emlen T. Littell, Esq.; Rev. J. C. Dutcher; Capt. E. C. Boynton, U. S. Army, Military Academy, West Point; Rev. T. E. Vermilye, D. D.; Rev. S. D. Denison; John Travers, Esq.; Rev. John McClintock, D. D.

In bringing this Narrative to a close, the Committee of Arrangements desire to express their sense of obligation to the several gentlemen who, in various ways, rendered to them most valuable assistance in the discharge of their duties, and contributed largely to the success of the celebration. To Professor Peck, LL. D., and A. S. Van Duzer, A. M., Secretary of the Alumni Association, who were the Marshals of the Day, the thanks of the Committee are especially due for the energy, promptness, and skill with which they executed the task assigned them; and also to the several young gentlemen who were the Marshals' Aids,—Messrs. Lenox Smith, of the Senior Class, D. Lord, Jr., of the Junior, Clarence Hyde, of the Sophomore, and James M. Brady, of the Freshman.

William A. Jones, A. M., the accomplished Librarian of the College, Mr. (now, deservedly, Doctor) William H. Walter, the Organist, and Mr. Stephen R. Weeks, the Assistant-Librarian, likewise rendered important services, which the Committee desire gratefully to acknowledge.





4

ADDRESS

OF

FREDERICK A. P. BARNARD, LL. D.

EX-PRESIDENT OF THE ASSOCIATION.

GENTLEMEN OF THE AMERICAN ASSOCIATION FOR THE ADVANCE-
MENT OF SCIENCE :—

You are assembled to day for the third time since the revival of your association in 1866. On the occasion of that revival it was my privilege to be your presiding officer—a privilege and an honor which I shall always remember with the highest gratification and pride—but of which one of the resulting obligations has never been fulfilled. My unavoidable absence at your last meeting had, as I supposed, been tacitly accepted as a sufficient apology for the failure; but your standing committee, with a fidelity of recollection which I had hardly anticipated, have preserved the record of the debt, and have consequently assigned me the not unpleasing duty of welcoming your return at this time to your annual deliberations.

The city which, on the present occasion, has extended to American science the encouragement of its generous hospitality, is one which has been heard of before in connection with large assemblies professing to represent our country in one or another of its aspects. But this is the first time that a great convention has been assembled here which could claim to be called in the strictest sense national; a convention having no aims likely to engender suspicion in any quarter, and intent on no proceedings liable to be watched by any jealous eyes. For this is the first of the national conventions which the political, social, commercial and intellectual prominence of Chicago has attracted to this spot, of which the declared platform has been entirely catholic and universally acceptable; the

first which could justly hope to enlist the sympathies of all parties, all creeds, all states, all sections alike. It is gratifying to know that there is one subject in regard to which the whole world of mankind have a common interest, one subject on which there can be but one party. Such a subject is that which occupies us. For the object of science is truth. Its progress is the progress of civilization, its encouragement is the encouragement of the arts of life, and the enlargement of the comfort and the happiness of the human race.

Of these truths your presence here to day is a striking illustration. The very possibility of such a general gathering of the votaries of science, is a possibility which science herself has created. You are assembled from every point within the limits of our vast territory. Some of you have left your homes a thousand, some fifteen hundred, miles behind you. Three days ago you were in your laboratories, your lecture halls, your quiet studies, pursuing tranquilly your ordinary occupations, and to day finds you assembled here. The power by which you have been enabled thus to triumph over space is the gift of science to the industrial arts. The iron way which has brought you is her creation; the iron arm which has dragged you, has been clothed by her with its herculean strength. Were engineering science at this time no farther advanced than it was when the great commonwealth of Illinois, but a brief half century ago, first took her place in the sisterhood of the states, the time it would consume, the expense it would involve, and the excessive fatigue it would entail to bring together a body of representative men from points so widely separated as the banks of the St. Lawrence, and the shores of the Gulf of Mexico, would render an assembly like the present a thing wholly impracticable. It is then to science herself that we owe it that we are able, with so little inconvenience, to hold our annual consultations for the advancement of science.

Yet it may be doubted whether this fact has to any great degree occupied your thoughts on your way hither. You have been much less intent upon what science has done than upon what she has yet to do. Accomplished facts have for the investigator but a secondary interest. He is even prone almost to forget them in the earnestness with which he addresses him-

self to the things which remain to be accomplished. There are a thousand truths, and applications of truths, which in the day of their novelty fastened universal attention, but which having become familiar, and having been added to the permanent treasury of knowledge, have at length almost ceased to be remembered as the gifts of science to civilization. Who, for instance, that uses now the electric telegraph, thinks of the slow process of evolution by which, in the hands of Ørsted and Ampère and Arago and Henry, the laws of electro-dynamics were gradually unfolded; or of the happy sagacity by which, in the laboratories of Daniell and Grove and Bunsen, the powerful and persistent electro-motors now in universal use were conceived and perfected; or recognizes the fact that but for the combined results of all these labors, this wonderful instrument of communication could have had no existence? Or who that pauses for a moment before the show window of a print shop in any one of our great cities, to inspect curiously the latest photograph of the pyramids of Egypt, the mountain gorges of California, the glaciers of the polar seas, or the ruins of Mexico or Peru, remembers, if he ever knew, the weary and disappointing toils protracted through years, by which Daguerre and Talbot, and Niepce de St. Victor succeeded at last in permanently fixing the fleeting images of the camera?

These illustrations lead me to remark that, in the history of every new truth brought to light by scientific investigation, there are three stages corresponding to three periods in the life of man. The first may be likened to the period of birth and infancy, deeply interesting to the parent or to those for whom infancy has charms, but regarded with indifference by the world in general; the second answers to the youth of the individual, during which feebleness is ripened into strength, and the helpless child is trained to a useful vocation; and the third is the period of maturity in which the full-grown man becomes merged in the society which surrounds him, where, though his usefulness is recognized, few trouble themselves to inquire beneath what roof he was cradled, or under what tutelage his nascent powers were developed.

In the observation of Volta upon certain curious disturbances of electrical equilibrium, we have an example of a truth in its

infancy : in electro-chemistry and electro-magnetism, in the alkaline metals, in the galvanoplastic arts, the electric telegraph, and the light houses of Dungeness and La Hève, we have the same truth in its vigorous maturity. In the mercurial vacuum produced first by Torricelli, we have another elementary truth. In the engine of Newcomen, destined by successive transformations to pass into the powerful motor which is the soul of modern industry on the land and of modern commerce on the ocean, we have this also in its later phases of development and useful application. Galileo demonstrated the isochronism of the oscillation of suspended bodies ; the consequence is before our eyes every day in the pendulum clock. Wollaston marked the curious fact of the transverse striation of the solar spectrum. Bunsen and Kirchhoff converted this into an instrument of chemical research, and Huggins, Miller, Secchi and others have more recently read by its help the constitution of the sun, the fixed stars and the nebulae. The applications of truths of science to the industrial arts are so numerous, that there is scarcely any article we handle in our daily life, which does not furnish an illustration. And all these things serve to show how matured science passes gradually into common knowledge, while nascent science is always the exclusive possession of the limited class who make its culture a specialty.

This class, though limited, hold to the world in general a position and a relation exceedingly important. They may be likened to the pioneer corps of an army marching through an unexplored and difficult country. They break the path in which the multitude are to follow. Their place is in the front, and their faces are turned toward the wilderness which the invasion has not yet reached. And so our pioneers are always found energetically operating in the border region which divides the known from the unknown ; and they too like the others, forgetting or disregarding the things that are behind, are chiefly intent on effecting new encroachments upon territory as yet unconquered. Their task is difficult. Their numbers are few and scattered. They feel, therefore, the need of often drawing near together, and taking counsel of each other, for the promotion of their common interests. It is

thus that they have been led to organize themselves into permanent associations for mutual assistance and encouragement. Such associations have accordingly grown up in every land in which science is cultivated, and their influence has been eminently beneficial in promoting unity and efficiency of action, and in keeping alive the zeal of those who compose them, for the advancement of the common cause. On this side of the Atlantic your association is the most prominent example of this class of organizations.

It is a usage sanctioned by time, that your retiring president, in laying down his office, should improve the opportunity to glance briefly over the general field of science, and present in outline the principal facts of progress which have marked the history of the year that has passed. It is not quite easy, nevertheless, in an area of intellectual activity so extended, and where the laborers are so numerous, to make such a survey exhaustive; and where investigation is so steadily continuous, it is equally difficult to decide how much belongs to the history of a particular year, and to adjust the achievements of science severely to the calendar.

This last difficulty is illustrated in the very first topic to which I shall draw your attention. Since your last meeting the Smithsonian Institution has published the fifteenth volume of its "Contributions to Knowledge," containing the new investigation of the orbit of the planet Neptune, by Professor Simon Newcomb of the United States Naval Observatory. But this able discussion, though only now formally published, already dates back some two or three years, and has been for some time in the hands of astronomers. It has, nevertheless, an interest which will justify a brief mention here. The theory of this planet has long been in a condition so unsatisfactory as to demand thorough revision. And since our country was the first to produce an investigation of the perturbations of the body, and an ephemeris of its movements, in the contributions of Professor Peirce to the Monthly Notices of the Royal Astronomical Society, and in the discussions and tables published by the lamented Walker among the earlier Smithsonian papers, it is gratifying to find that the work of reconstruction has been undertaken and has been so well

performed by an American hand. The necessity of the revision appears in the fact that, in 1863, the ephemeris of Walker was $33''$ in error, and that of Kowalski, published some years later, $22''$. Before the end of the present century, the error of either of them must become enormous—not less than $5'$. The earlier theories were founded on a very limited period of observation; that of Walker on the observations of but little more than a year, during which the planet had moved only $2\frac{1}{2}^{\circ}$. In the twenty years which have since elapsed, the progress of this body in longitude has exceeded 40° ; so that the influence of errors of observation upon the value of the elements is tenfold less than it was when Mr. Walker undertook the investigation. Professor Newcomb has produced a theory which represents the observations since the discovery of the planet in 1846, and also the unconscious observation of the same body by Lalande in 1795, with a maximum error, usually negative, less than $2''$ and a mean error less than $1''$. He has discussed the question whether the observations can be better satisfied by any changes in the elements of the orbit and in the masses of the disturbing planets, and has concluded that, while no admissible change in the mass of either Jupiter or Saturn will effect the perturbations of Neptune, neither will any correction of that of Uranus do so which is not at once excessive and unreliable. Considering the question whether the remaining errors are owing to an extra-Neptunian planet as yet unknown, he decides against the present evidence of the action of any such body; but regards this negative result as not by any means decisive against the existence of such a planet, because the errors of a slow moving planet require for their development a much longer time than those of planets of short period, these errors developing themselves not in proportion to the time, but to the square of the arc moved over. When Neptune was detected through the perturbations of Uranus, this latter planet had been observed through an arc of 270° ; and the two planets had been in conjunction. Yet notwithstanding these favoring circumstances, Uranus had only departed about $5''$ from an elliptic orbit since its first discovery. Had it been observed only through an arc of 120° (something less than half as great) its deviations would not

have exceeded 1''. Whether, therefore, Neptune is the exterior planet of the solar system or not, cannot be at present positively decided, and no evidence to throw light upon the question can be looked for in the anomalies of its movements during the present century.

This valuable contribution to astronomical science suggests another, more recent, by the same hand. From the observations of the planet Mars in opposition made in 1862, at Washington, Albany, Greenwich, Leyden, Helsingfors and Pulkova, in the northern hemisphere, and at the cape of Good Hope and Santiago de Chili in the southern, Mr. Newcomb has deduced a new value for the solar parallax, which he makes to amount to 8''.855, with a probable error of 0''.02. The value of this element is perhaps the most important of all constants in physical astronomy; since on it depends our knowledge of the distance of the sun, which is the unit of measurement in the celestial spaces. The value heretofore received, 8''.58, deduced by Encke, from the observations of the transit of Venus made in 1769, has always been regarded with a certain distrust, founded on circumstances not wholly satisfactory attending the Norwegian observations. Mr. Leverrier had greatly strengthened these suspicions, by discussing the observations of the sun, in reference to the lunar inequality of its longitude, which led him to the conclusion that the parallax should be increased to 8''.95. He had arrived at a similar result from a careful revision of the theories of the planets Venus and Mars, according to which it appeared that such an increase of the parallax was necessary to satisfy the observations of those bodies.

In the mean time Mr. Fizeau attempted his ingenious determination of the velocity of light, by observations made at limited distances on the earth's surface. Mr. Foucault subsequently engaged in the same experimental investigation, with apparatus constructed upon an original principle. It is easily seen that if we have the true velocity of light, we have indirectly and at once the solar parallax. For the aberration of the fixed stars gives us a determinate relation between the velocity of light and that of the earth in its orbit. And the velocity of the earth with its periodical time, furnishes directly

its mean distance from the sun. The results obtained by both these experiments, inclined toward the smaller value. Mr. Foucault more recently resumed his experiments; and having taken extreme precautions to exclude the possibility of sensible error, he arrived at new results which led him to announce the parallax at length, at 8".86. It is interesting to observe the near approach to identity between this result, and that reached by Professor Newcomb by a method purely astronomical. Professor Newcomb combines this determination with several others, including that deduced from the experiments of Foucault just mentioned, and those which have been furnished by the micrometrical measurements of Mars by Professor Hall made in 1862, the parallactic equation of the moon, the lunar equation of the earth, and finally the transit of Venus of 1769 recomputed by Professor Powalky; the conclusion arrived at, after assigning its proper weight to each determination, being, that the true parallax is 8".848, or 8".85, with a probable error of 0".013. This would make the mean distance of the sun $92\frac{1}{4}$ millions of miles, or about 3 000 000 less than the value heretofore received.

A very curious question has been agitating the astronomical world for more than a year past, in regard to the asserted disappearance of the lunar crater Linnæus. This crater was described by Mädler as very large, being not less than six miles across, and also as very deep. In the latter part of 1866, it was announced by Dr. Schmidt of Athens, that it had entirely disappeared and had been replaced by what he described as a whitish spot. Subsequently within this spot and at its centre, it was further asserted that there had appeared a minute dark point, seen independently by Schmidt at Athens, Secchi at Rome, and Lyman at New Haven, indicating the formation of a new crater; and this has apparently grown larger and gradually changed its place. If these observations, which seem as yet to be received by many with reserve, should be confirmed, quite a new interest will be given to the study of the physical aspects of our satellite.

On the 21st of August, 1867, Jupiter was seen under those rarely occurring conditions in which he appears without satellites. Two of the satellites were in eclipse, and two were pro-

jected on his disk. At this time the appearances presented by the satellites in transit were so remarkable as to attract general attention. The light of the fourth satellite was extremely feeble so that it was described as appearing no brighter than its shadow on the disk. There was noticed, also, by one observer, a singular configuration of light and shade occupying one half the disk of the third satellite, such as had, on a former occasion, been seen on the other half. This suggests the possibility that the commonly received opinion, viz., that all the satellites of the planets like the moon, turn constantly the same face toward their primaries, is not true. The dimness of the fourth satellite in transit, and the varying brightness of all of them in similar circumstances, were noticed a century and a half ago by Pound; and the latter phenomena were at the time ascribed by him, very plausibly, to the proper rotation of those bodies on their axes and the unequal reflecting power of different parts of their surfaces. The identity of the rotation and revolution period of the secondaries must evidently no longer be taken for granted.

Of the family of small planets between Mars and Jupiter, the number rapidly increases. Since your last meeting, eight additional members have been announced, of which three are due to an American observer, Professor Watson of Ann Arbor. The total number now known, so far as I am at present informed, for it is not quite safe to be positive, is exactly one hundred. The earliest body of this class ever discovered, and except one probably the largest, was first seen by Piazzi on the very first day of the present century. It is interesting to remember, at a time when every few months adds a new member to this already very numerous group, that this first of the minor planets was lost soon after its discovery, and was not recovered again for nearly eleven months. Piazzi's last observation, previous to the loss, was made on the 11th of February, 1801, when illness interrupted his labors. The rediscovery was made by De Zach with the aid of an ephemeris computed by Gauss, who had never seen the object, on the 31st of December, of the same year. Of seventy one of these small planets Mr. Stone has formed a table of probable dimensions. He places Vesta, discovered fourth in order in 1807, and

esteemed at the time of its discovery the smallest of the four, at the head of the list, and fixes its diameter at 214 miles. Echo stands lowest in his catalogue, its diameter being estimated at only seventeen miles. It illustrates the increasing frequency of discovery in this class of celestial objects in recent years, and at the same time the high degree of perfection of the modern star maps which has made this frequency possible, that after the discovery of Vesta nearly forty years elapsed before another addition was made to the list, and that the first half of this century yielded in all, only ten. Since 1850, the average rate of discovery has been about three a year.

The period of the diurnal rotation of Mars has recently been redetermined by Mr. Proctor of the Royal Astronomical Society from a comparison of Hooke's observation made March 12, 1666, with recent observations in 1856, 1864 and 1867, the longest interval embracing 71588 rotations. The result shows the necessity of a correction amounting to about a second, of the period assigned by Mädler from the results of seven years observations. It exceeds by about a tenth, or fifteen hundredths of a second, the determination made by Kaiser.

Our countryman, Mr. Cleveland Abbe, formerly of the Pulkova Observatory, has made a careful and laborious calculation of the parallax of Sirius, from the observations of this star with the transit circle made at the Cape of Good Hope. He concluded the parallax to be not less than $0''.17$ nor more than $0''.37$ making the distance to fall between six and thirteen hundred thousand times the diameter of the earth's orbit. The determination by Henderson, deduced from observations at the same point, lay between these limits and near the lower, implying a distance of 900000 similar diameters. When it is considered that this star is by far the brightest in the heavens, exceeding, if we adopt the scale of Secchi, perhaps forty times the brilliancy of 61 Cygni, whose parallax is near the maximum given by Abbe in this determination, we may form some feeble conception of what must be the intrinsic splendor of this magnificent globe.

Mr. Abbe has also contributed to the Royal Astronomical Society an interesting examination of the distribution of the nebulae. The clusters and planetary nebulae he considers to

belong to the milky way, but other nebulae form independent systems.

On the seventeenth of August in the present year, a day now near at hand, there will occur a total eclipse of the sun, under circumstances remarkably favorable to the duration of the obscuration. It is stated by Dr. Weise, before the Royal Astronomical Society, that there are but two total eclipses in history which, in respect to duration, can be compared to this. The first is the famous eclipse said to have been predicted by Thales, which happened in May, 583 B. C., during a battle between the Lydians and Medes, filling both armies with consternation; and the second was that which occurred in June, 1435, in Scotland, where it was long remembered as "the black hour." The eclipse now just at hand occurs near the perigee and almost at the moon's minimum distance from the earth. It happens also precisely in the moon's ascending node. Where the centrality takes place on the meridian, the two bodies will be nearly in the zenith, so that the augmentation of the diameter in altitude will be a maximum, and the rate of motion of the shadow on the earth's surface a minimum. Thus the total obscuration will be hardly less than seven minutes. It is unfortunate that this interesting phenomenon will occur in a portion of the earth least favorable to its observation. It commences in Abyssinia, crosses southern Arabia and Hindostan, the Gulf of Siam where the duration of the total phase is maximum, the islands of Borneo, Celebes, and the southern part of New Guinea to the New Hebrides, where it ends at sunset. The extraordinary opportunity which this eclipse offers for studying the phenomena of the solar atmosphere, and the nature of those extraordinary rosy flames, so called, occurring during totality, which have for thirty years past attracted so much attention and excited so deep an interest on the part of astronomers, will not, however, remain unimproved; very large and thorough preparations having been made by the astronomers of England and continental Europe, to secure the most complete record possible of all the phenomena, including photographic views of the phases from many different stations. The results obtained by such means during the eclipse of July 18, 1860, notwithstanding the dis-

appointments which attended some of the distant expeditions then sent out, were of great interest; and it is to be hoped that the similar opportunity which now presents itself will be a means of securing a rich addition to the materials in possession of science for the study of solar physics.

This question indeed of solar physics, the constitution of the sun's atmosphere, his photosphere, and his central nucleus, is one which has attracted to itself recently much laborious attention. The solar spots have been especially the subject of patient and persevering study, furnishing as they do evidence of the extraordinary activity and energy of the forces which are constantly in operation producing changes in the luminous envelope. Mr. De la Rue, Mr. Balfour Stewart and Mr. Loewy, have particularly devoted themselves to the determination of the laws governing the variations of the total area of spot-surface, and its distribution over the face of the sun. This area was ascertained for successive epochs by the actual measurement of enlarged photographs of the sun. The face of the sun being divided into thirteen equal portions or lunes, each corresponding to a day's motion, by great circles passing through its poles, the total area of the spots in each lune was ascertained for several series of observations, embracing a period of many months, and the results tabulated. From a series of elaborate tables thus formed, it was presently made apparent that the region of maximum spotted area is not always similarly situated on the sun's disk as seen from the earth, but passes from left to right. The existence of an external influence affecting the phenomenon is thus made very probable, and by comparing the changes with the movements of the planets, Venus seems to be distinctly indicated as the body exercising this influence. The recurrence of the maximum spot-area in the same longitude relatively to the earth on the sun's surface, is evidently periodical, and the period corresponds to the synodical period of Venus. Also the average size of a spot seems to be maximum on the side of the sun which is turned from the planet. A similar effect is ascribed to Jupiter, but the investigators show that this, though perhaps as powerful, is not characterized by so large inequalities as that of the smaller body, whose comparative

inferiority of mass is more than compensated by its proximity to the sun. The observers deduce the additional conclusion from their inquiry, that the spots are, on the whole, nearest to the solar equator when Venus is in the plane of that great circle, and farthest from the solar equator, when the heliographical latitude of the planet is greatest. This observation gives significance to the fact long known, that the solar spots are never seen far distant from the equatorial region.

As to the cause of these spots, or more generally and more properly perhaps, the nature and determining causes of the photosphere in which they make their appearance, a conjectural theory must be sought in the known influence of exceedingly high temperatures and pressures upon the chemical condition of all bodies. This subject has been discussed from time to time with great ability, by Mr. Faye of the Imperial Observatory of France, by Mr. Balfour Stewart of London, and by Mr. Sterry Hunt of Montreal. These gentlemen conceive the sun to consist of an immense mass of matter in a gaseous condition, but with its chemical affinities held in check by heat, so that all the elements are mingled together but not combined. The condensation of this gaseous mass is such as to give it a density not less than that of water. Radiation from the surface of the mass produces a depression of temperature sufficient to permit certain elements to enter into combination; forming finely divided solids or liquids, which being held in suspension in the surrounding gases and vapors, become intensely luminous, as phosphoric acid is momentarily luminous when formed by combustion in oxygen gas, or as carbon is luminous in the candle flame. Supposing the general surface of the sun to be thus overspread with a luminous envelope, the theory of the formation of the spots connects itself with that of the lines of more than average brightness, or the faculae. And it seems to be established that while these latter are in the nature of immense elevations or wave crests of the luminous matter in suspension, so the former are vast depressions. Or rather, while the faculae are produced by ascending currents, the maculae are formed by currents descending. The descending currents carry the luminous precipitate into a region of greater heat, where it is decomposed

and disappears. Above the photosphere there is evidence of the existence of an atmosphere, extending perhaps a million of miles, perhaps much more, above the visible surface, and in this, on those rare occasions furnished by total eclipses, are seen the irregular red clouds or projections which have been so much discussed of recent years, and of which we hope soon to know much more. These flames are to be examined with the spectroscope and the polariscope during the eclipse of this month, and their photographic images will be secured at many stations. Observations will also be made with a view to the detection, if possible, of the intra-mercurial planet, of which the existence has been suspected, and which was looked for in 1860 without success.

The star-shower of November 14, which had been witnessed in Europe on the 14th of November, 1866, returned, as predicted, one year later, in a more westerly longitude, and was extensively observed on this side of the Atlantic. This return has furnished fresh material to confirm the received theory of these displays. Periodical meteors may be regarded as proceeding from what are called by Schiaparelli cosmical clouds, which, from having a cometary character, have been transformed by perturbations produced by the planets into currents or streams, revolving round the sun in extremely elongated orbits, and tending constantly to become rings. Mr. Newton had pointed out that the period of revolution of the cosmical cloud producing the November meteors must be one of five, of which four were less than the earth's period, and one much larger, or thirty two and a quarter years. Soon after the return of the shower in 1866, Mr. Adams took up the investigation of the question, by computing the perturbing effect of the planets upon the movement of the node, on supposition, first of a period less than a year, and secondly, of one extending to thirty two and a quarter years. The first supposition gave less than half the observed amount of movement, and the second accorded so closely with observation as to leave no doubt of its truth. Mr. Leverrier regards this meteoric stream as having originated from the perturbation of a cosmical cloud or comet produced by Uranus about seventeen centuries ago.

A very curious fact connected with this subject, is the recent discovery that certain bodies which have been distinctly recognized as comets, are unquestionably members of periodical meteoric groups. It was found by Schiaparelli, that the great comet of 1862 is only one of the August meteoroids, and that the first comet of 1866 is a member of the November group, near the head of the train. Another curious fact, discovered by Hoek of Utrecht, is that there are double or triple systems of comets, or systems in which two or three must have had a common origin, though their perihelion passages have been separated in time by years.

Some observations on the spectra of the meteors of 1866 were made by Mr. Browning of London. Those of different bodies presented appearances remarkably different. They were generally continuous, some presenting all the usual colors except the violet, which was perhaps not seen on account of its feebleness. In some, the yellow was greatly predominant, though the other colors were present. Some were purely yellow, or nearly so, and a few purely green. This mode of observation, if pursued, may lead to useful results.

The spectroscopic observations of the sun, stars and nebulae, continue to be prosecuted, those of the stars especially by Father Secchi. He has arranged the stars, as characterized by their spectra, in three groups, the first embracing only such white stars as have a black band in the part of the spectrum between the green and blue, and another in the violet; the second distinguished by possessing colored bands in the red and orange; and the third giving only fine lines. This last embraces Arcturus, Capella, and our own sun. To this, also, the red stars generally belong. Few stars are so exceptional as not to be referable to one or another of these classes, but one, at least, has been found by Secchi, of which the spectrum resembles that of the sun observed through an absorbing solution. This indicates an atmosphere of peculiar character and of extraordinary density.

To the metals discovered spectroscopically to exist in the sun, Mr. Angstrom adds manganese. This makes the twelfth, or if we call hydrogen a metal, the thirteenth, certainly ascertained to exist in our central luminary; and the presence there

of copper, is also probable. None of the precious metals are yet among the number.

Mr. Stockwell has recently published an extension backward of his chart of the eccentricity of the earth's orbit, for a second million of years. Should the theory discussed two years ago at Buffalo, which connects the glacial periods of geology with this secular inequality, be found tenable, the chart of Mr. Stockwell may serve a useful purpose in regulating geological chronology. An interesting inference deduced from the inspection of the chart, is that the periods of corresponding maximum and minimum eccentricity occur at intervals of 1450000 years. Another is, that two large maxima are sometimes immediately consecutive, and sometimes separated by a number of minor maxima, so that, on supposition that such a maximum brings a glacial period, the interval between two such periods, or two severe periods of such a character, may be very variable.

It seems due to the memory of one of the most deserving and most highly esteemed of American astronomers, now passed away, that I should mention in connection with these astronomical notices, the recent publication of the fifth volume of the Annals of the Harvard Observatory, containing the extremely interesting observations of the great nebula in Orion, made by Professor George P. Bond. This work completed and edited by Professor Safford, now of the Dearborn Observatory of Chicago, constitutes one of the most elaborate and valuable studies of a nebula that has ever been made; and it will be a standard work of reference in all future observations of the changes in form or brilliancy of this most beautiful object of its class, and of the stars associated with it.

In geology, while the contributions to particular knowledge have been numerous, and evidences of activity in every quarter are satisfactory, there is little which is new in regard to theory. Mr. Lombardini has communicated to the Royal Institute of Lombardy, some evidences of glacial action in the great depression of central Africa, and supposes that the mountains of Abyssinia and more southern regions will furnish confirmatory evidence to the same effect. He concludes, as Agassiz has done from his observations in Brazil, that during the glacial

period the ice-envelope overspread the entire planet. The tenability of this theory is now one of the questions of highest interest yet unsettled. There is some ingenuity in the suggestion recently made, that glacial phenomena in low latitudes as well as the evidences of a former tropical climate in the polar regions may be accounted for by supposing the upheaval of mountains in extra-tropical regions to have caused a gradual sliding of the earth's external crust upon the central fluid, in consequence of the centrifugal force of the protruded masses, tending to drag them down to the equator. It is certain that the amount of flexure which the crust would on this supposition have to undergo, would not be sufficient to produce rupture, and the suggestion is free from the mechanical difficulties which attend the hypothesis of a change of position of the earth's axis of rotation.

The geological researches of Mr. Raphael Pumpelly in Japan, Mongolia, and China, have at length appeared among the Smithsonian Contributions. They furnish a fund of valuable information in regard to an extensive region of the earth which has been little explored.. Dr. Newberry's discovery of the mesozoic character of the great Chinese coal deposits, from fossil plants gathered by Mr. Pumpelly, is one of the most interesting facts brought to light by modern geological research.

Archæological inquiries, especially researches concerning the physical and social condition of prehistoric man, and the chronology of the several phases of his existence, continue to be pursued with unabated zeal. New traces of the primitive races are continually appearing, some of them in unexpected quarters, as for instance remains of pile-dwellings in the Thames at London, and flint implements associated with the bones of recent and extinct mammals at Paris. The most important novelty in the way of discovery in this department, however, is that of a human skull, in the lower post-pliocene deposits of the plain of the Aretino in Italy. This occurs in a regular stratification consisting of lacustrine clays of great thickness, embracing bones of *Elephas primigenius*, *Bison priscus*, *Cervus euryceros*, and others. Stone implements were found associated with the skull and with these bones. Whatever may be said of the date of deposits like

these, which must be very ancient, there can hardly be a doubt that the computations which have been founded on the observed progress of the formation of alluviums in the neighborhood of former discoveries, have led to extravagant estimates of their antiquity. An interesting reëxamination of the phenomena presented in the valley of the Somme, has recently been published by Professor Andrews of Chicago.

Chemistry is so fertile a subject that it would be hopeless to undertake anything more than to notice, here and there, a point of interest in the history of its progress. Two improvements in technical chemistry are announced, which may, possibly, be found to be of great commercial, as well as of scientific importance. One of these is a method which has been protected by patent in France, for manufacturing sulphuric acid without the use of large leaden chambers. There is nothing new about the process in principle, but much in the details of application; the apparatus being forty times reduced in bulk, and the acid produced almost entirely free from impurities. Considering the importance of this great mineral acid—the most important probably, at once to chemistry and the arts of all chemical reagents—anything which tends to simplify the process or diminish the cost of its production, or to improve the quality of the product, must be esteemed a very essential benefit in which science and the industrial world share equally.

The other novelty referred to, is a substitute for the famous process of Leblanc, for the preparation of carbonate of soda from the chloride. In this the sulphuric acid is replaced by sesquioxide of chromium, heat being applied and a current of steam directed upon the mass. A second heating with charcoal, which converts the chromate into carbonate and revives the sesquioxide, completes the operation. The process is ingenious and beautiful. Whether it will prove commercially a success remains to be seen.

Contributions to organic chemistry have been too numerous to admit of a detailed review. In this department, Berthelot continues to stand preëminent. His labors on the hydrocarbons have been productive of many extremely interesting results, comprising among them the synthesis of several

organic compounds. A year ago, he effected the direct synthesis of acetylene by the union of carbon and hydrogen ; and more recently, from acetylene, he has succeeded in producing oxalic acid. Another very interesting result obtained by the same investigator, consists in the discovery of a universal method of transforming any organic body whatever into a hydrocarbon, with the amount of carbon unchanged, and the hydrogen a maximum. The reagent which produces this effect is hydriodic acid.

The method of Berthelot just mentioned for producing oxalic acid synthetically, is equalled if not surpassed in interest by a discovery of Dr. Drechsel, by which the same acid is produced by a reduction of the carbonic. This result, on its announcement in the chemical society of London, was received with expressions of high and just admiration.

Considerable interest has also been excited by the researches of Mr. Griess, upon a series of organic compounds in which the hydrogen is replaced by nitrogen, which have led him to the discovery of a class of organic explosives, exceedingly energetic. It is a curious fact that every known explosive, liquid or solid, is a compound into which nitrogen enters.

In physico-chemistry, a very ingenious theory has been proposed by Mr. M. Carey Lea, of Philadelphia, to explain the action of light upon photographic salts, especially the iodide of silver. The prevailing opinion has been, that the salt undergoes a partial reduction, and thus acquires the property of combining with the vapor of mercury. The improbability of this hypothesis is shown by the fact long known to photographers, that the plate loses this power of combination, and recovers its sensitiveness to light, if kept for a time in a dark place. Mr. Lea is of opinion that the change is physical and not chemical, and that the molecules acted upon by the light have their vibratory motions—their *vis viva*—exalted, by sympathy with the luminous vibrations ; as sonorous bodies are excited by a sound in harmony with that which they are capable of yielding. He proposes to give to this influence the name actinescence. This theory serves to explain the remarkable phenomenon discovered by Niepce de St. Victor, viz :

that light may be "stored up" or absorbed by bodies which have been exposed to it, so that afterwards such bodies will act chemically upon sensitive plates in the dark; an effect which continues for a considerable time. The plausibility of the theory will doubtless secure for it a general reception.

Dr. Emerson Reynolds of Dublin, has recently shown that photographic plates which have been impressed by light, may be quickly restored to sensitiveness, and the latent images obliterated, by exposure to ozone. He regards this fact as a conclusive proof that the image is produced by a chemical change, and that what he calls the mechanical theory, which is the theory of Mr. Lea, is untenable. The premises do not seem to justify the conclusion. The molecules of ozone of which the density has been recently found by Regnault to exceed $1''.5$, may very probably possess precisely such a vibratory period as to interfere with the vibrations of the molecules of the iodide, though the oxygen and nitrogen of the air have not such an effect.

It has been demonstrated by Professor Knoblauch that heat, like light, transmitted through doubly refracting crystalline films, suffers interferences; so that in the polariscope, if the analyzing prism is rotated, the calorific rays transmitted in opposite azimuths are complementary to each other. This furnishes a new and very interesting evidence of the fact that light and heat are physically identical, and that their differences are only differences relatively to our perceptions.

To the apparatus of static electricity a valuable contribution was made a year or two since, in the now well known induction machine of Mr. Holtz. A similar service was rendered to dynamic electricity in the ingenious magneto-electrical machine contrived by Mr. Wilde. At the Universal Exposition in Paris during the last year, Mr. Ladd, of London, exhibited a mechanical electro-motor of still more simple construction, in which the currents generated in the wire wrapping of a revolving armature are employed to excite the electro-magnet by which the armature is itself excited; while a second revolving armature is employed for the purpose of obtaining an independent current to be used in electrolysis or for the production of light.

This machine of which the effects are surprisingly powerful has excited an extraordinary interest for the promise it holds out of practical usefulness, and for the illustration it affords of the direct conversion of dynamic into electrical energy.

Two new chemical electro-motors have been announced, one by Mr. J. B. Balsamo formed of plates of iron for both positive and negative elements, immersed in cells with a porous partition, filled on one side with dilute acid, and on the other with solution of table salt. The iron on the side of the acid acts as the positive element, and the other as the negative. This battery which is of considerable power, has a theoretic as well as practical interest.

The other novelty is a battery in which the negative element is chloride of silver fused round a silver wire, the positive element being zinc. The pair are immersed in salt water. This apparatus which is recommended by its simplicity and neatness, is due to Dr. Hugo Müller and Mr. Warren de la Rue.

A curious addition has been made to the materials for the theory of electro-dynamics, in the discovery by Mr. Edmond Becquerel, of the fact that capillarity is an electro-motive power. The contact of solutions in capillary spaces is attended with the deposition of their bases in metallic form, precisely as in galvano-plastic operations. This discovery is eminently suggestive. Its farther prosecution cannot fail to lead to interesting, perhaps to important, results.

To dynamic electricity Dr. Edlund has also contributed the discovery that currents passing through conducting metals produce an expansion of the conductor which is independent of heat.

Certain phenomena observed by Professor Daniell show the existence of a considerable mechanical power in the voltaic current, capable of transporting heavy substances in mass. This discovery taken in connection with nearly simultaneous observations by Mr. H. Poggendorf on an analogous effect produced in the movement of static electricity, presents a paradox of which the solution is not obvious. In the voltaic current a conducting substance like mercury is transported rapidly along a tube from the positive to the negative pole. This movement will even take place on an inclined plane against gravity. In the continuous discharge between the electrodes of a Holtz

machine, however, the mercury moves with equal rapidity from the negative to the positive pole.

Discussion still continues on the much controverted subject of spontaneous generation, notwithstanding the seemingly conclusive experiments of Mr. Pasteur. In connection with this subject, Dr. Wyman's investigations with respect to the power of living organisms to resist heat, published since your last meeting, possess unusual interest.

Recent publications throw much light upon the question heretofore unsettled, as to the immediate source of the energy manifested in the muscular contractions of living animals. It has been a favorite supposition that this energy is furnished at the expense of the muscle itself, and that no part of it is derived from any other source. This hypothesis seems to have been conclusively overthrown, by recent observations ; among which may be mentioned those of Dr. Douglass upon the prisoners in the Madras penitentiary, which show that the proteine compounds furnished in food are not an adequate equivalent for the work performed. Muscular energy must therefore, in a measure at least, be derived from the oxidation of non-azotized compounds contained in the circulation. But this information, though interesting, brings us no nearer to the solution of the mystery how heat or electricity or chemical force becomes muscular force in the living animal. On the subject of muscular dynamics, there is absolutely no theory at all. We have a rational proximate account of the conversion of electrical energy into magnetic energy. We have a conception of how and why the magnet produces motion. We have a theory also of the transformation of heat into molar force in the cylinder of the steam engine. But in regard to the contraction of animal muscles there is not yet in any proper sense, any physical theory whatever. We have on the one side the chemical action. We have on the other the mechanical. The connecting link—the mode of transformation of the one into the other—is wanting—so utterly wanting that the vaguest conjecture cannot hazard even a hypothesis to supply it. Have we not here probably reached a limit which it will never be permitted to human investigation to transcend? This question suggests a thought to which I desire, for a moment before concluding, to

draw your attention, and for the sake of which I have purposely abridged the imperfect sketch I have attempted of the recent progress of science.

The great flood of new truth which scientific investigation has in our own day let in upon the world, the multitude of mysteries of which but lately it would have seemed hopeless, perhaps presumptuous, to attempt the solution, but which have melted away nevertheless in the powerful focus of modern scrutiny, have given birth to a feeling, not yet perhaps universal but quite general, that there is no truth whatever which is not explicable by physical law; or, to state the proposition a little differently, that, whatever may be claimed as truth without being so explicable, is but idle fancy, the mere "stuff that dreams are made of," unworthy to be considered by the genuine philosopher. The doctrine, if I understand it, is that we know nothing but phenomena, that as to the relations of these we know only that they occur in certain invariable sequences, the idea of causation being a mere conceit, or at least a thing with which we have nothing to do; and that whatever transcends observation, or is beyond the reach of demonstration, must be set down as matter of useless speculation, as utterly and absolutely unknowable. Under the operation of this principle, metaphysics in the highest sense of the word, that is to say abstract philosophy, and ontology, or the theory of being, must be swept out of existence. So at first thought, it would seem, must be psychology; but this appears not to be so, and it is precisely here that I find the point to which I propose to direct my animadversion. The spirit of the so called positive philosophy very strikingly characterizes much of modern physical inquiry, even when conducted by men who repel the imputation of belonging to the school of Comte. It is in harmony with this spirit to exact that all phenomena, whether mental or material, shall be regarded as belonging to one common class, and shall be treated in precisely the same way. It thus builds up a new mental philosophy of its own; or reduces rather mental philosophy to be a branch of physics. I believe that this exaction is too comprehensive. I believe that physical inquiry has a field for its legitimate application which is limited by certain natural and definite boundaries. I believe that the

positive spirit itself properly applied within this field, leads us directly up to the conclusion that there is something certainly existent which it cannot reach, and which if not absolutely knowable is yet knowable in its most important relations; which is only to say that it is knowable in precisely the same sense in which we can be said to know anything whatever. That I may make myself more clearly understood, I must enter into some detail of illustration.

A very distinguishing peculiarity in the physics of recent years is the prominence which has been given to the doctrine of the conservation of force. A doctrine bearing this name has indeed long been recognized in mechanics, but it was earlier restricted to mechanical force alone; and as to force in that form even, was held to be true only under certain conditions, or with certain limitations. If the motion of a system of bodies is modified by their mutual action on each other, whether they draw each other by means of inextensible cords, or impel each other by means of rigid rods—the connections in either case being without inertia or weight—or whether they attract or repel each other by forces varying according to any law, or whether finally they act by direct collision, provided only they possess the property of perfect elasticity; in any of these cases the sum total of the living forces of all the bodies of the system will remain absolutely the same. This law was announced by Huyghens more than two hundred years ago. At that time force was understood in no other sense than as the power to move visible masses, or as the energy embodied in such masses when in motion. The truth was therefore rather abstract than practical. It admitted of no visible exemplification in terrestrial physics. No known solid possessed the property of perfect elasticity; and no experiments on motion could be instituted except in a medium by which motion is continually impeded. The mechanism of the heavens furnished the only perfect illustration in nature of this very important proposition. Notwithstanding the perpetually varying velocities of the great bodies composing the solar system, the consequence of their mutual actions on each other, and notwithstanding the incessant increase and diminution of living force to which each separate body is alternately subject, the

sum total of the living forces of the whole, remains from age to age unaltered. But in all dynamical phenomena which occur at the earth's surface, the truth of the law is masked by the unavoidable attendant conditions. Not even is the proposition of the conservation of force as understood in the time of Huyghens, illustrated in the motion of a single body; still less could its verification be looked for in the action of many bodies upon each other. A single body projected through the air, or rolled along a plane, soon parts with its motion. If in order to reduce the number of resistances, and simplify the experiment to the last degree, rotary motion be substituted for linear, and the experiment be conducted in a vacuum, the result only differs from the former by spreading out the waste over a larger period of time; the body still parts with its motion though more slowly than before. In the case of a body moving in a resisting medium—as a cannon ball for instance through the atmosphere, there may have been some early philosophers who imagined that the lost force still survived in the motion imparted to the invisible substance of the air; but in the experiment in which the sole sensible resistance is the friction of an axle upon its bearing, there is no doubt that all the world, men of science as well as those who claimed no such character, agreed in supposing that force was actually lost. The doctrine of the conservation of force, therefore, although the name originated two centuries ago, was not to the mechanical philosopher of that day what it is to us. It was a doctrine of conservation under favoring circumstances, and not of necessary persistence under all conceivable circumstances. Indeed while the notion of force was restricted to the mechanical energy exemplified in moving masses, it was impossible that the doctrine should be understood in any such absolute sense. For this species of energy, molar energy as it has of late become usual to call it, does disappear, as in the case of the turning wheel and the rolling ball, or as in the collision of bodies destitute of elasticity; so that if molar energy is the only form of force admitted, the doctrine of the conservation of force is not universally true. This doctrine therefore, in the comprehensive sense in which we understand it, is a doctrine of our own time, though it has borrowed its name from another

age. The term force has for us a much wider significance than it had for the mechanical philosophers of the period of Huyghens and of Newton. It comprehends all those influences which were known to early physics by the name of the imponderables: powers concerning the nature of which there have been so many and so discordant hypotheses, which have been conceived of as fluids permeating the pores of the most solid bodies yet without increasing their weight; or as showers of minute projectiles pervading all space, yet without possessing momentum. Heat, electricity, light, are all regarded now as forces into which molar energy when it disappears is completely transformed; and to these we may add gravitation and chemical affinity. Magnetism, which in the books of the early writers occupied so prominent and so important a place, has ceased to take rank as an independent force, but is merged in electricity of which it is one of the manifestations. The facts that molar force may generate heat, and that heat in its turn generates molar force, are facts that have been long enough familiar: the notion even that heat is transformed force is by no means new. It may be said indeed that the experiments of Rumford, at the close of the last century, were sufficiently conclusive to establish this last doctrine. But even to admit this, was not yet to recognize the great truth of the conservation of force in all its fulness; since though it were regarded as true that force is converted into heat, it did not follow that all the force expended underwent this transformation. The water of a stream drives a mill, because the living force of the water in the race is transferred to the wheel; but a large part of this living force escapes without effect nevertheless. A certain mechanical force expended in friction produces heat. Does it any more follow in the one case than in the other, that the heat is the representative of all the force exerted? This could not be asserted until after very careful experimental investigation. Indeed we know that, in this particular form of the expenditure of force, it is not always true; though if the heat produced does not fully represent the force exerted, some other form of equivalent will appear—as for instance electricity.

The doctrine of the conservation of force, understood in the sense of declaring that no force is ever lost and no force ever

created, is one of which the truth could only be demonstrated after experimental science had reached a very high degree of refinement. And it could receive no experimental demonstration until there had been established some unit of reference to serve as a common measure of the quantities compared. If a given molar force disappears with the effect of raising the temperature of the body on which it has expended itself, and if the original *vis viva* and the resultant heat are equivalent in quantity, the same amount of force must be competent to produce always under the same circumstances, and in similar and equal masses, the same elevation of temperature, and different forces must produce effects of the same character in proportion to their amount. A satisfactory unit of comparison may therefore be found in the quantity of heat which is sufficient to raise a unit of quantity of standard matter, as for instance of water, one degree of the thermometer. With such a definite standard of comparison, it is possible to test the truth of the hypothesis that heat and force are convertible, and it is in this way that this important proposition has been experimentally established. The same exact equivalency has been in like manner shown to exist between electricity and heat, between chemical action and electricity, and between each of these and molar energy. And as light and heat seem to be but different manifestations of the same force, or different modes in which the same force is related to our perceptions, the law of conservation of force may be presumed to extend equally to both, and may therefore be regarded as the great law underlying and controlling all physical phenomena.

It has been affirmed, as I am aware, by a very distinguished metaphysician, Mr. Herbert Spencer, that this important truth is one which needs no demonstration. It is, as he asserts, a truth, which has its origin in direct intuition, and which lies at the foundation of all the knowledge we possess of the material world. According to him, indeed, we have no knowledge whatever which is not traceable back at last to force; and as to force he tells us that what we know of it is only, first, that it *is*, and secondly that it persists. In regard to the persistence of force, he finds the evidence of this intuition in the universal recognition of the postulate that action and reaction are equal.

This allegation, he holds, is but another form of saying that there cannot be an isolated force beginning and ending in nothing ; but that any force manifested implies an antecedent force from which it is derived and against which it is a reaction. Clearly then he says, the persistence of force is an ultimate truth of which no inductive proof is possible. This exposition of the postulate is not perhaps entirely convincing. If reaction can be only understood as a taking up in living form by one body of a force which another body abandons, then Mr. Spencer's interpretation of it is true. But if it can also be understood as a destruction of any part of the original force, the consequence he deduces from it does not follow. To impute to it the former sense exclusively, is to reduce the postulate to an identical proposition, which in its proper form of expression would be this : Force which persists, persists. The truth is that this proposition, and all the laws of motion laid down by Newton, as well as the doctrine of the conservation of living force enunciated by Huyghens, were understood when announced, and long after, to be true only of forces acting in circumstances which are never realized at the earth's surface, and as theoretic and not as practical laws. They were admitted as deductions from observation, and not as self-evidently necessary. As we now understand the subject, Newton's third law is literally true under all circumstances, and it does in fact draw after it the necessity of the persistence of force ; but this is a very different thing from supposing such a necessity to be a truth of intuition. The question of the origin of this notion is however of no practical importance : for the admission of the truth of the conservation of force as a theory does not render it any the less necessary that experiment should come in to inform us what are the quantitative equivalents of force under its various forms ; and without a knowledge of these equivalents the doctrine can admit of no useful application as an aid to investigation.

I should not be justified in detaining you so long over a truth which in the physics of our day has become elementary, were it not that the bold extension which has recently been made of this law to the phenomena of conscious life, seems to me to transcend the limits which must ever arrest the progress of successful physical inquiry.

Besides the forces which we have been considering, and which are the only forces whose existence is made known to us in the phenomena of the inorganic world, there is another, whose effects are only seen in bodies endowed with life. Perhaps it should rather be said that there is a class of such forces (I call them forces for want of a better term) for the manifestations assume several very distinct characters; yet though the results are exceedingly conspicuous, the mode of operation is so obscure as hitherto to have baffled investigation. Under the influence of these forces compounds are built up which chemical art has in vain attempted to imitate, and which are of so noticeable instability that they break up spontaneously directly after the sustaining power is withdrawn. The bodies formed of these materials commence usually in germs of exceeding minuteness, pass through a regular cycle of growth and decay, and are at last abandoned by the mysterious principle which has given them their form and their structure, and left to perish. Among these bodies which make up the empire of organic life, two broadly distinguished kingdoms present themselves, the vegetable and the animal. Both of these are equally animated by the force which determines organization; but the former except in this particular do not differ from the brute matter out of which they spring; while the latter possess the power of self movement, and a will which directs this power. They are moreover influenced in their movements by impressions made upon them from without; impressions which we call sensations and refer to a property which we denominate sensibility. If we consider the animal kingdom more in detail, we shall see that it embraces classes widely differing from each other in point of dignity. Voluntary motion and sensibility in its lowest form of manifestation—the sense of touch—seem all that distinguish the humblest of these classes from vegetables. As we ascend in the scale, other senses appear, and a distinct intelligence with the evident exercise of judgment and memory displays itself; while the manifestations of emotion, as of pleasure, apprehension, anger, etc., are very obvious. These mental and emotional qualities increase in the energy of their development through many successive grades, until at length, leaping a great gulf of division which separates the highest

order of animal life from all other forms, they blaze out in man in the full effulgence of a perfected reason. Nor is it only the mental superiority of the human race which gives it its supremacy in the animal world. To deduce consequences from premises, to follow out a chain of causes to its probable results, is a high endowment, but it is one which is partaken though doubtless in a degree infinitely inferior, by many animals. But to distinguish between right and wrong—to conceive even the notion that there is a right and a wrong, argues the possession of an entirely new faculty. It matters not upon what basis ethical writers may choose to build up their systems, denying often the existence of such a thing as an innate moral sense. It matters not by what means they may explain the genesis of the ideas of right and wrong as originating in conceptions purely intellectual—the fact remains that man has a sense of right and wrong which is sustained by a faculty in him which he calls conscience,—a faculty which he knows to be a very different thing from simple understanding: and no evidence has ever yet appeared that such a sense or such a faculty exists even in the most embryonic condition in any other living animal.

We have then here several different forms of force associated with life: the organizing force; the force represented by sensibility; the force of will; the force of intelligence; the emotional force, and the force which manifests itself through the moral sense. If to all these principles I apply indiscriminately the word force, it is partly because of the poverty of language which furnishes no other generic term under which to embrace them all; partly because one of them at least, the organizing force, has long been distinguished by that name, though its existence as a physical force has been generally denied; and partly because when it is claimed, as it is of late claimed, that sensation, thought, conscience, emotion and will, are only manifestations of known physical forces acting upon the living organism, and are in fact those same known forces presented under new forms, these functions of sentient and intelligent life are by the terms of the proposition itself reduced to the class of physical forces and are properly called by the same name.

The question is, are we compelled to concede this claim. In accepting the doctrine of the conservation of force have we no choice but to admit that the barrier so long supposed to exist between the spiritual and the material world is a sheer creation of the imagination, and that the mind is as literally a machine operated by strictly physical forces as a wind-mill or a steam engine? Such an admission is by no means flattering to man's self-esteem. It is nothing less than revolting to his religious instincts. What are the arguments on which we are expected to accept it?

In regard to the processes of organic growth and development, of the assimilation of food, the absorptions, secretions and other physiological functions continually in activity in the living animal or vegetable, it may be admitted without hesitation that the efficient force producing the corresponding changes is derived from without, and that the changes themselves are the strict equivalents of the force thus expended. Take the case of the growing plant. Its food is mainly carbon, derived from the carbonic acid of the water which it draws up from the earth, or finds in the air around it. The force by which this very stable compound is decomposed, so as to leave the carbon free to combine with the plant, is furnished by the sun's rays. Of the equivalency of the two forces there can be no doubt; nor have we any need in the case to call in any special force under the name vital, to perform any part of the work of the change. And yet we certainly have need of something more than the mere juxtaposition of the materials in presence of the solar influence to produce the effect. If the principle of life is not in the plant, the operation will not proceed. The carbonic acid may be there, the vegetable tissue may be there, and yet the solar rays may play upon them forever without producing the slightest effect. The vital principle then is the something which causes the plant to grow. I will not call it a force—I think the term vital force a misnomer—because there is no work done for which we have not other forces in full equivalent—but I say that whatever it is, its presence is a necessity to the performance of the work, and in its absence the work is not performed. More than that, I say that not only will not the forces which produce growth during the life of the plant,

be sufficient to do so after life has ceased ; but no combination of forces or influences or materials which human skill can contrive can now or will ever produce one leaf of the simplest plant or one blade of the humblest grass of which nature under the influence of the principle of life is producing millions on millions every succeeding summer.

More than this, there is a peculiarity of the compounds which are formed during the growth of organized beings, animals as well as plants, which marks a wide departure from the mode in which the forces of nature act when left entirely to themselves. The tendency of these forces is to equilibrium. Upon an irregular plane a heavy body, unobstructed in its motion will seek the lowest level. A balance, when disturbed, may oscillate for a time, but it comes at length to rest. Waters make their way to the ocean. Unequally heated bodies placed near each other share at length between them the common stock of heat. Electricity accumulated in excess upon one body will escape to others less highly charged. So too of chemical forces. They tend ever to produce the most stable compounds. A stronger combination never spontaneously breaks up to give place to a weaker. Suppose that all the materials of which the earth is composed should be thrown together in elementary form, it is possible that by the first action of affinities many feeble combinations would be produced ; but it is certain that these must one after another give way to stronger ones until the whole should be combined in forms possessing the absolute maximum of stability, unless the process should be arrested by a solidification of the mass preventing farther motion. Now in the compounds produced during the growth of plants and animals, there is a complete inversion of this process : that is, there is an ascension from the lower to the higher level—a substitution of the weaker for the stronger, of the unstable for the stable. And animal compounds, that is those formed where the type of life is highest, are, as a rule, greatly more unstable than vegetable. The presence of the principle of life in organized bodies, therefore, determines the physical forces which in such bodies do the work of change, to operate in a manner in which they do not operate where it is absent. Light and chemical affinity, for

instance, are interchanged in the plant. Light disappears, and in disappearing restores to activity the force of affinity which was dormant because satisfied, but in order to do this it needs a determining influence which it finds in the simultaneous presence of the vital principle, and never without. Nor need it be said that in exercising such a determining power, life becomes a form of physical force. The light consumed and the chemical force revived are complete equivalents. Each represents the other. Neither has derived any increase nor suffered any diminution from association with the vital principle. What this principle has done is to determine, in regard to two forms of the same force possible in the same organism, which shall be the form manifested and which the form suppressed.

But if we are not to regard this influence of the vital principle as of the nature of a force, it will perhaps be demanded how it shall be explained? That, I reply, is a question which admits of no answer. It is a question which cannot be answered now, and a question which will not be answered ever. It is an inquiry which leads us beyond the limit of legitimate philosophical research. The vital principle differs from every form of force known to us, and from every other known property or quality, in that it confers upon the body which it animates a special character of individuality, and in that it is incapable of being insulated or of being transferred from body to body. We know it only through the peculiar organizing power which belongs to it, and which is manifested not merely in the chemical changes which it determines, but in the external forms which the resulting compounds assume.

The phenomena of vegetative life present us then with an inscrutable mystery, but they suggest no necessary conflict with the great doctrine of the conservation of force. But when we advance to the higher manifestations of life we are told that such a conflict does threaten us, unless we yield up all that we have been taught to believe of the possibility of spiritual existence, and relinquish, as untenable, convictions which have been partaken by the whole race of mankind. Organic changes are physical effects, and may be received without hesitation as the representative equivalents of physical forces expended. But sensation, will, emotion, passion, thought, are in

no conceivable sense physical. That they may be excited by the impressions of physical forces upon the animal organism is indeed admitted; that they are so is a matter of common experience; but that they are these forces themselves transformed into consciousness, and that in ceasing to be what they are they become physical forces again, is a supposition so totally repugnant to our instinctive convictions, that at the first announcement one is at a loss to conceive how it would ever have been for a moment entertained. This however is a philosophy which at the present day is boldly taught in public schools of science, and which numbers among its disciples many very able men. One of its most distinguished teachers and oracles, Mr. Herbert Spencer, sums it up briefly and tersely in these words:

"Various classes of facts thus unite to prove that the law of metamorphosis which holds among the physical forces holds equally between them and the mental forces. Those modes of the unknowable which we call motion, heat, light, chemical affinity, etc., are alike transformable into each other and into those other modes of the unknowable which we distinguish as sensation, emotion, thought: these in their turn being directly or indirectly retransformable into the original shapes. That no idea or feeling arises save as a result of some physical force expended in producing it, is fast becoming a common place of science; and whoever duly weighs the evidence will see that nothing but an overwhelming bias in favor of a preconceived theory can explain its non-acceptance. How this metamorphosis takes place, how a force existing as motion, heat or light, can become a mode of consciousness—how it is possible for aerial vibrations to generate the sensation we call sound, or for the forces liberated by chemical changes in the brain to give rise to emotion, these are mysteries which it is impossible to fathom. But they are not profounder mysteries than the transformation of the physical forces into each other. They are not more completely beyond our comprehension than the natures of mind and matter. They have simply the same insolubility as all other ultimate questions. We can learn nothing more than that here is one of the uniformities in the order of phenomena."

Nothing need be added to the explicitness of this statement. In every school of philosophy, the union of mind with matter has been among the profoundest of mysteries. There have been teachers who have held that mind itself is material, but even such have not assumed that thought is matter also. Thought has been regarded as a property, an endowment, a quality of the matter of which mind is made. The modern

school which inculcates the dogma that mind is force, is no less materialistic than that of Hobbes or Spinoza. We know nothing whatever of force but as a concomitant of matter. Without the existence of matter external to us, we should know nothing of force. Mr. Spencer, indeed, regarding the question from an opposite stand-point, lays it down among his fundamental propositions, that without the existence of force we should know nothing of matter; but his very illustration of this proposition shows its fallacy, or at least the very equivocal nature of the evidence on which it rests. For the force of which, as he correctly says, we first become conscious, is the force of resistance, perceived when the organs of touch encounter a material substance. Yet no such resistance could be felt unless the organ itself were material, and hence it is the preëxistence of matter which is the indispensable condition of the discovery of force. The two ideas in fact originate together. Resistance discovers to us the existence of matter and of force simultaneously; and hence it is that we may reaffirm that we know nothing of force and can conceive nothing of force except as it is a concomitant of matter. The force of resistance is a dead force. Living force is a property of matter in motion. In those forms of the unknowable, so called by Mr. Spencer, which we name heat and light, modern philosophy recognizes the motion of matter, no less than in the energy of a projectile thrown from a cannon, or of a planet revolving in the celestial spaces. When heat was recognized as a force it was declared to be a mode of motion, and this descriptive title was by common consent received as fit and proper. Light, electricity, chemical action, are regarded no less as modes of motion also. In the case of these unknowables, the motion is presumably molecular, and in contradistinction to this, the force of moving masses is called molar; but in the case of all known forces, however unknowable they may be and however unknowable as to their essential nature they are in their mode of efficiency, they are simply matter in some mode of motion. The philosophy therefore which makes thought a form of force, makes thought a mode of motion; converts the thinking being into a mechanical automaton, whose sensations, emotions, intellects, are mere vibrations produced in its material sub-

stance by the play of physical forces, and whose conscious existence must forever cease when the exhausted organism shall at length fail to respond to these external impulses. If the law of conservation of force is therefore to be extended to mental phenomena, the immortality of the soul can be no longer maintained. On this hypothesis indeed man has no soul. Life is but a momentary phenomenon, a casual condition of matter, to be classed with combustion, incandescence, sound, odor, anything most accidental and evanescent. More than this, the living being, while his brief consciousness endures, is the mere sport of forces foreign to himself. His conscious freedom of will is nothing but an illusion. His thoughts, his feelings, his acts, are all links in a chain of inevitable events, determined by unalterable physical laws. He ceases to be a moral agent or an accountable being. Let it be observed moreover that the doctrine of necessity here forced upon us, differs from that which has been inculcated by necessitarian philosophers heretofore. The necessity which fetters the will by making it the slave of motive, is one in which the coercion is moral and not physical; and which leaves us room at least to respect poor human nature though we may be compassionate. That which presents will and motive together as two modes of motion, of which the first is but the second under a new form, is a necessity of which the slave has lost even respectability, and is reduced to the humble level of a piece of mechanism.

But it is not because of these consequences that I reject a doctrine so derogatory to the dignity of humanity. The business of the philosopher is to follow on the trace of truth whenever it may lead. He must not suffer feeling, or preference, or prepossession, or prejudice, for a moment to bias his judgment. If the law of the conservation of force, rightly interpreted, conducts us of necessity to materialism, we must accept the conclusion, however humiliating we may find it to our pride or however ruinous to our hopes. To my mind no such necessity exists.

In proof of this position it is of course no argument, and I do not present it as one, to allege the utter incongruity which every mind uninfluenced, I was about to say unperverted, by

favorite philosophical preconceptions, feels to exist between mental and physical phenomena. Consciousness, to any mind, is a mystery sufficiently profound; but to suggest that it may be only a mode of motion, is to an ordinary mind little less than a self evident absurdity. But, as just remarked, this is no argument.

It is an argument, however, to say that thought cannot be a physical force, because thought admits of no measure. I think it will be conceded without controversy that there is no form of material substance, and no known force of a physical nature (and there are no other forces) of which we cannot in some form definitely express the quantity, by reference to some conventional measuring unit. Even while heat and light and electricity continued to be regarded as independent and unconvertible forces, they were still subjected to measurement, each after a manner peculiar to itself; and the ratio between the amount of latent heat of a pound of water and that of a pound of steam was as well known as it is now. The minutest quantities of electricity were determined by the most delicate of balances, and the intensities of different lights were numerically expressed by means of experimental and instrumental comparisons. Now no such means of measuring mental action has been suggested. No such means can be conceived. It is not a sufficient reply to this difficulty to say that thought is unlike any other species of quantity known to us, and therefore no such species of quantity can furnish us with a measure. We do not ask that it shall be measured against anything unlike itself. Heat was not originally so measured nor electricity nor light. A unit for the quantitative comparison of each of these powers, was found in a determinate quantity of the thing itself which was to be measured. And before thought can be claimed to be a form of physical force, it must become possible so to define a given quantity of thought, that all mankind, or if not all mankind, every scientific investigator at least, shall be perfectly able to understand exactly what quantity is meant. Can this be done? If so it will probably be in the same way in which units of reference have been established for other powers. Such units have been fixed by considering intensity, time of action, quantity of matter acted

upon, velocity generated, or work done ; or by a portion of these elements variously combined. The force of gravity is measured by quantity of matter, time and velocity. Heat is measured by quantity of matter and determinate elevation of temperature. Light by intensity at a determinate distance. Now no one would think of measuring thought by the effect it produces on matter external to the thinker, which is *nil*. Of all the possible indications of greater or less of which the case admits, there are but two—intensity and time of action,—which are not self-evidently, at the very first suggestion, unavailable. Nor would these two alone suffice for a standard of *general* reference, even were the force one unquestionably susceptible of measurement ; since quantity depends not only on intensity and time but also on the magnitude of the source. For a given individual this consideration might be disregarded ; and the quantity of the *thought-force* of such an individual might be measured by the intensity conjoined with the time, but this only on supposition that thought-intensity is susceptible of estimate. On the impossibility of such an estimate it is hardly necessary to dwell. Now I maintain that a thing which is unsusceptible of measure cannot be a quantity, and a thing that is not even a quantity cannot be a force. I know it may be replied that though the unit of measurement may not yet have been found, it may nevertheless be so hereafter. I answer no ; the objection is not merely that such a unit is at present impossible, but that even the conception of such a unit is an impossibility. Not only is the quantity of thought in a human brain presently unmeasurable, but its measurability is not even conceivable. And yet if thought is physical force, the time must come when its absolute energy at any given moment, and in any given individual, shall be expressible not only in units of the same description of force, or thought-units, but equally in equivalent units of any other force ; so that perhaps we may be able to say of the mental labor of a philosopher in his study, that in half an hour it amounted to fifty or five hundred thousand foot-pounds.

Perhaps it may be said that there is an indirect way of arriving at the unit of thought-force which I have overlooked ; that this force is doubtless generated by the oxidation of the

brain, that the amount of this oxidation may be ascertained during a determinate period of continuous mental labor; that this oxidation is a chemical action capable of producing a calculable amount of heat, and that this amount of heat may be properly accepted as the measure of the thought-force. This notion will not bear examination. Oxidation is going on at all times in all parts of the body. It is necessary to the maintenance of the animal heat. It is necessary to furnish muscular force. It is necessary to the large involuntary movements such as those of the heart the arteries and the intestines, and those smaller movements which accompany the various secretions. It is necessary especially in the brain to supply the nerve force, whatever it is—probably electricity—by means of which the mind transmits its mandates to the members, and through which it receives the impressions made upon the organs of sense. To distinguish between these various sources of consumption would be a problem of the most complicated character; and the difficulty or impossibility of securing adequate data for its solution by the observation of functional changes in the living man places it practically beyond the reach of investigation. But while this difficult problem remains unsolved, to assume that if solved it would show an outstanding balance of force to be placed to the credit of mental action is simply a *petitio principii*, and has no title to respect as an argument. The very strong probability is that no such balance would appear.

It is asserted, however, that some mental impressions are in a manner measurable; that this is true at least in regard to sensations. The feelings of pressure produced upon us by heavy bodies are greater or less in intensity according as the bodies are heavier or lighter in the balance. Bells, vibrating strings, wind instruments, yield sounds which we perceive to vary in loudness according to the degree of force expended in producing them. Bodies at different temperatures, as shown by the thermometer, affect us more or less forcibly with the sensation of heat. To all which it may be replied that sensation and thought are two things essentially distinct, and that we are speaking here of thought and not of sensation; that sensation is an affection of the organ of sense as well as of the

mind and is not exclusively mental : that the mental part of it is a cognition of the state of the organ, as modified by a physical force ; and that the cognition embraces of course not only the fact but in a general way the degree of the modification ; and therefore that a certain quantitative relation between sensation and external force is naturally to be looked for, and in no manner whatever sustains the hypothesis of a conversion of the force into the sensation. As the mind estimates quantitatively a phenomenon of the external world of which it receives information through the sense, so in sensation itself it estimates quantitatively a phenomenon equally external to its own essence though occurring within the material organism with which it is connected. It may furthermore be added that sensation is not, like thought, a thing of which the idea of quantitative measurement is in all cases inconceivable ; for though the organ of sense may appreciate differences imperfectly, it is sometimes not very difficult to contrive modes of fixing a determinate unit of measure. This is obviously practicable in the case of sound ; it has been actually done in the case of light. Sensation is produced by external disturbing forces. It is attended no doubt with corresponding internal changes. The case is analogous to that of the organizing process, or that of the building up of the structure of the animal or plant. The interchange which takes place between the external and the internal forces takes place without loss or gain to either ; but it takes place in a manner which is determined by the presence of the vital principle ; and to the mystery which attends the simpler process of organization, it here superadds a new and still more perplexing mystery, the phenomenon of consciousness.

But I proceed farther to say that purely mental impressions cannot be transformations of physical forces, because the character and the intensity of the impressions are not determined by, nor in any manner proportional to, the nature or the amount of the force impressed. The most powerful mental impressions are those which succeed to impulses affecting the nerves of sight or hearing ; and these are sufficient often to call into activity all the muscular force which the percipient is capable of exerting. Such impulses, considered as forces, are too feeble, even when most energetic, to admit of being ex-

pressed as finite quantities. Yet if we interpret the phenomena in strict accordance with the hypothesis under consideration, we must say that these impulses are first transformed into mental force, and that afterward this mental force, by a new transformation, takes the phase of muscular and finally of molar energy. Thus understood the doctrine is manifestly absurd, since it makes a small force equivalent to a large one. To evade the difficulty, its advocates introduce here a new and supplementary hypothesis, according to which, while the mental impression is the equivalent only of the external physical force, the more palpable manifestations which follow come from the chemical action excited in some confessedly incomprehensible manner, by the instrumentality of the mental impression. But this explanation is totally unsatisfactory, and is hardly less than fatal to the hypothesis it is intended to subserve. Whatever claim to acceptance the new theory possesses must be founded on the promise it holds out of a solution of a mystery which the spiritual theory candidly recognizes as above solution. This promise it fulfils only by presenting the original mystery under a novel form. How to explain the connection of mind with matter is the problem ostensibly proposed; and a solution is assumed to have been furnished when mental forces have been reduced to the level of physical. But how to explain the influence of the will over the members, or the power of emotion over the muscular system, this is the true difficulty; and this the solution offered does not reach in the least. We all admit that the sensible displays of force of which animals are capable, are derived from the chemical action which takes place in their organisms, and are examples of the transformation of one form of force into another in conformity with the law of conservation. But the new philosophy does not pretend that *these* forces are the equivalents of the mental forces which have set them into activity; or that they have either wholly or partly passed through the form of mental force previously to their appearance in the mechanical form. How then does the mental force—that is, the will or the emotion—excite them to activity? That is the question of which we had a right to expect a solution when we were told that the doctrine of the conservation of force was to clear up for us all the difficulties of

mental science. And that question is left precisely where it was before.

An analogy I know has been intimated between this case and that of the explosion of a mine by the application of a match, or the discharge of a gun by the pulling of a trigger—examples in which a very slight force may suffice to evoke another of tremendous power. This argument would perhaps be entitled to some respect, if an attempt had been made to point out any conceivable mode in which, in the case in hand, the match is applied or the trigger is sprung. In the absence of any such attempt, it amounts to nothing more than pure hypothesis. It is simply another form of asserting that the connection of the phenomena is physical because it *must* be physical. It is once more a naked *petitio principii*. We have here a repetition of the difficulty which presents itself in the case of vegetable growth. In the presence of the principle of life there occur sequences of phenomena which do not occur in its absence. The facts are undeniable, but a rational explanation of them is as far off as ever.

Another consideration here presents itself which is of profound significance, and which to an unbiased judgment can hardly fail to be decisive. Mental impressions excited by impulses affecting the nerves of sense, take their character and are determined in their intensity not in the least by the force which those impulses represent, but by the ideas momentarily associated with them. An insulting expression addressed in English to a Frenchman unacquainted with that language will be heard with indifference, while an Englishman in the same circumstances will be roused to indignation. Any man may contemplate a dagger in the hand of a friend as coolly as he would do any other piece of cutlery; but if he sees the same weapon uplifted over him by an assassin, he will be filled with alarm, and will instantly put forth all the strength of which he is possessed, for the purpose, if not of resistance, at least of escape. In these examples the physical forces in the cases contrasted are as nearly equal as possible; but the mental impressions which they produce are widely different. There is no explaining these discrepancies consistently with the hypothesis under consideration. There is in either case but a given

amount of external physical force ; there can be only the same definite equivalent of internal mental force. In the first instance the collocation and sequence of impulses on the ear of the Englishman conveys a *meaning* which in the case of the Frenchman is wanting, and the mental impression is consequently more powerful. Shall we say that this meaning—this accident accompanying the sounds—is force also ? If so, how is it projected into the mind of the hearer ? And how into one mind more than into another, when the physical impulses are in both cases identical ? Shall we find any help in this difficulty from the doctrine of the association of ideas ? What is the association of ideas ? Is it anything more than a *habit* of consecutive occurrence, acquired by the frequent juxtaposition of the ideas in the order of time ? And can unconscious forces be trained to form habits of diversity of action under physical conditions entirely similar ? Of course there is no escape from this difficulty, but by assuming, as the advocates of this theory do assume, that unconscious forces become forms of consciousness ; but this assumption involves the inevitable consequence that, in undergoing this transformation, they cease to be distinguished by that invariability in their modes of action which is the distinctive characteristic of physical force. Consciousness indeed is the rock on which this theory splits. Its supporters make no effort to explain this marvellous phenomenon. They admit, and indeed proclaim, that no explanation is possible. We make the same admission, but we claim at the same time that it is clear enough what it is not. The very fact that we can trace an unbroken series of entirely intelligible effects all the way up to the very point at which this surprising phenomenon presents itself, and then suddenly lose the thread altogether, is sufficient evidence that it is not physical.

But I will not pursue the argument. No possible explanation of mental phenomena can be founded upon a hypothesis which attempts to identify them with physical forces ; but on the other hand the attempt leads inevitably up to the conclusion that there is something existent which is beyond the reach of scientific investigation—something of which, nevertheless, the existence is just as certain as its nature is inconceivable.

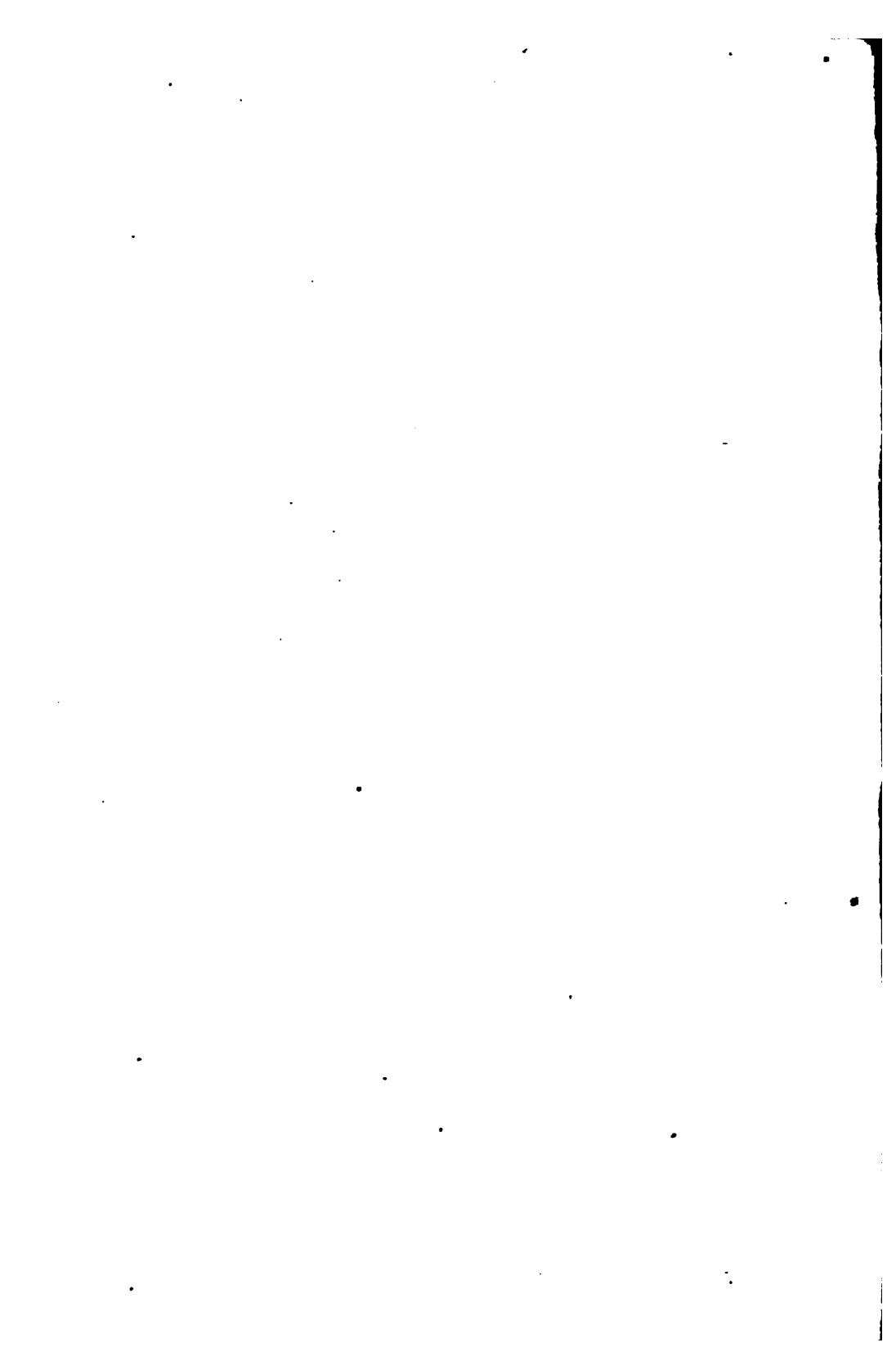
It is the fashion, I know, in the school of the positivists, to

treat as unreal whatever is undemonstrable. But the positivist believes in force, although he cannot tell what it is. And the organic world furnishes just as conclusive evidence of the existence of an influence superior to force, as the physical world exhibits of the existence of force itself. If indeed in accepting the doctrine of the identity of mind and force we could rid ourselves of mystery, we might find in such a fact some plausible argument for insisting on its admission. But in this respect it fails to advance us a single step. When it is objected that we can form no conception of mind, we reply that it is just as much out of our power to conceive of matter. If it is an inexplicable mystery that mind should act upon matter, the action of matter itself upon other matter is a mystery just as profound. It is certain that no two atoms touch each other. How then can many atoms cohere to form a solid mass? Even the great intellect of a Newton confessed itself baffled in the endeavor to conceive in what manner the sun could influence the planets, acting through a vast void space measured by millions of miles. Yet precisely the same difficulty returns in regard to every two particles which concur in the formation of the minutest material substance. It was a conception of Dr. Young that if one hundred men should be distributed equally over the surface of England, the distances between them might not be more disproportioned to their own dimensions than the void spaces in any solid to the atoms composing the solid. Does it then explain in any manner how mind acts upon matter, to say that mind is force—that is, that it is matter in motion?

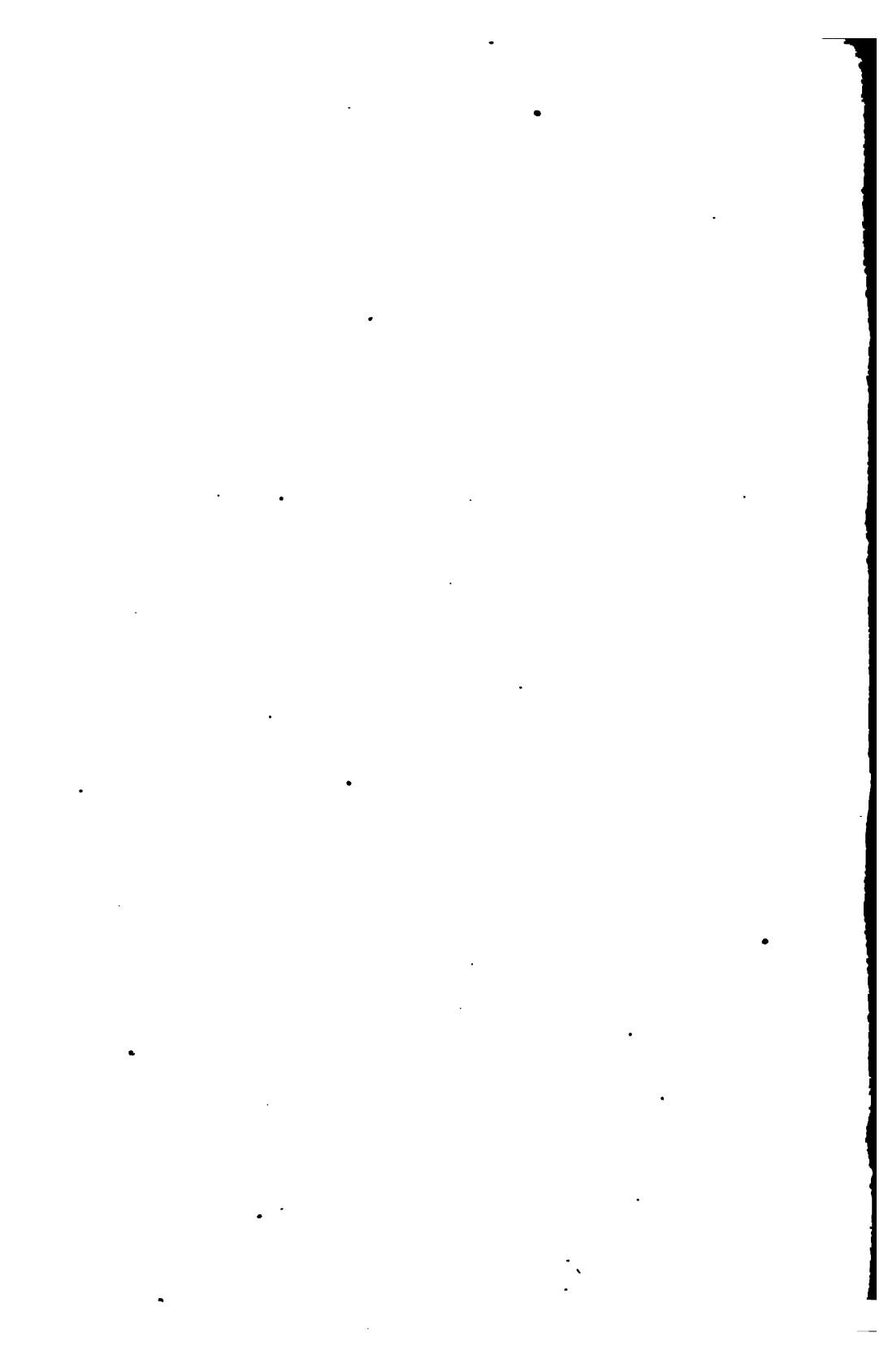
The reply may be supposed, that the action of matter upon matter is a fact of observation; and that we must therefore accept it as a fact, and because it is a fact, although we cannot comprehend it. But the action of mind upon matter is equally a fact of observation, and not only that but a fact of consciousness also. Thus we gain nothing whatever even in the way of simplifying our philosophy, by contradicting our intuitions, resisting our instinctive convictions, and abjuring our faith.

In what I have said it has not been my design to obtrude upon the Association any theological dogma, or to advocate

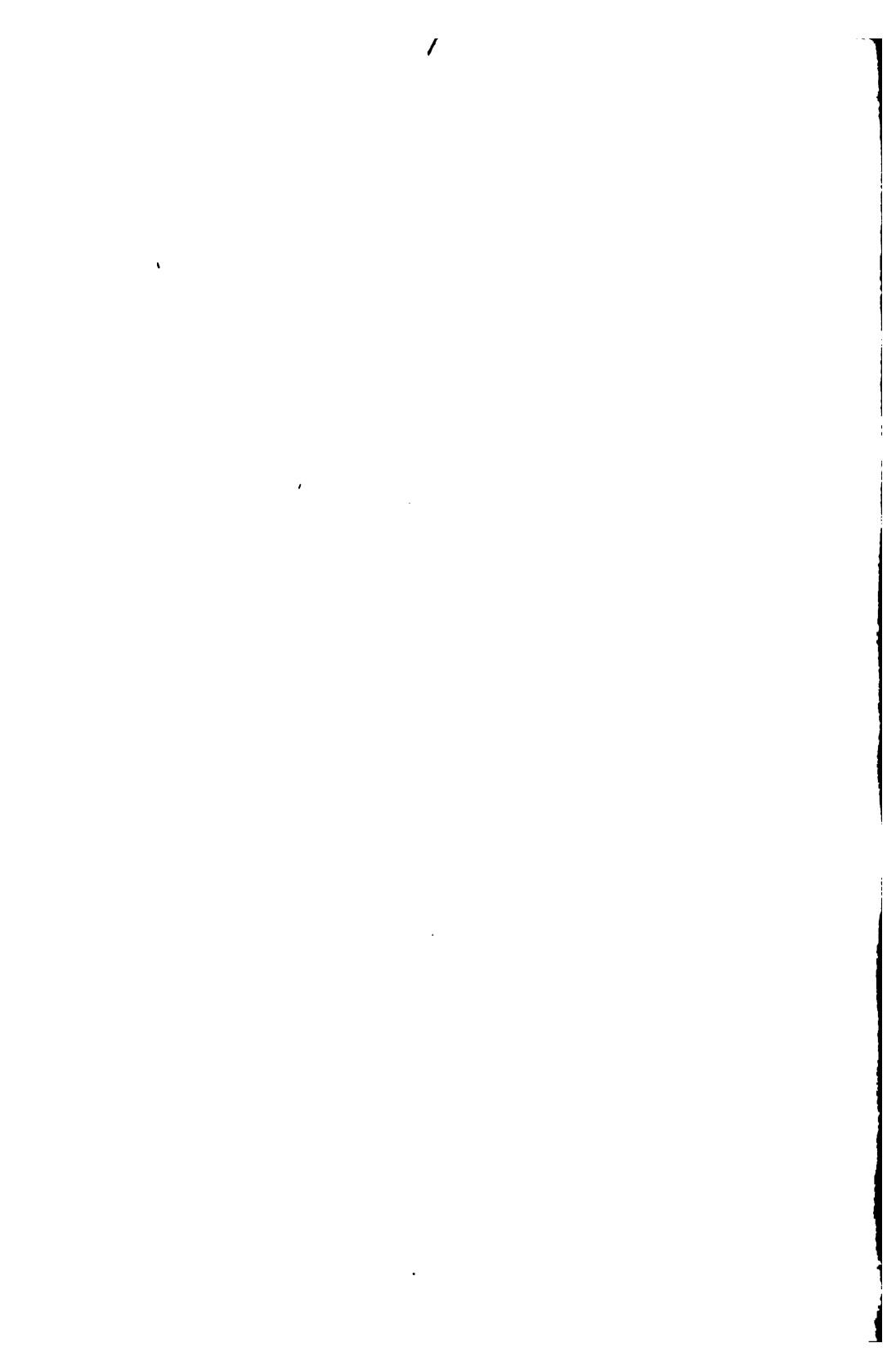
any religious creed. With such subjects this Association as an Association has nothing to do. I have not indeed, here or elsewhere, been in any manner instrumental in introducing questions of religion or of abstract philosophy into discussions of physical science. But when such questions are introduced by others, and when it is demanded of us to pronounce as physicists that spiritual existence is an absurdity and religion a dream, it seems to me that no choice is left us but to proclaim our dissent, or be understood by our silence to accept the doctrine as our own. When such is the alternative, for one I feel bound to speak, and to declare my conviction that as physicists we have nothing to do with mental philosophy ; and that in endeavoring to reduce the phenomena of mind under the laws of matter we wander beyond our depth, we establish nothing certain, we bring ridicule upon the name of positive science, and achieve but a single undeniable result, that of unsettling in the minds of multitudes convictions which form the basis of their chief happiness. If my views are correct, there is certainly a field which it is not the province of physical science to explore ; and which, if we are wise, we shall carefully refrain from invading. Either this is so, or man himself is but a transient unmeaning phenomenon, brought into existence without a purpose and without a destiny ; and neither science nor any other human interest is worth pursuing. In conclusion, gentlemen, thanking you for the kind attention with which you have listened to me, permit me to congratulate you on the cheering auspices under which you are once more assembled. You are here in a strength which recalls the happy days when your Association was in the zenith of its prosperity and its usefulness, and which justifies the hope that a fresh career of still more fruitful labors and of higher services to humanity is before it. May your mutual intercourse be productive of all the gratification which you have anticipated, and may the interchange of views in which you are about to engage bring with it at the same time enjoyment and profit.











Bernard, F. W. T.

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OR
SOME STATISTICS
OR
COLLEGIATE EDUCATION;

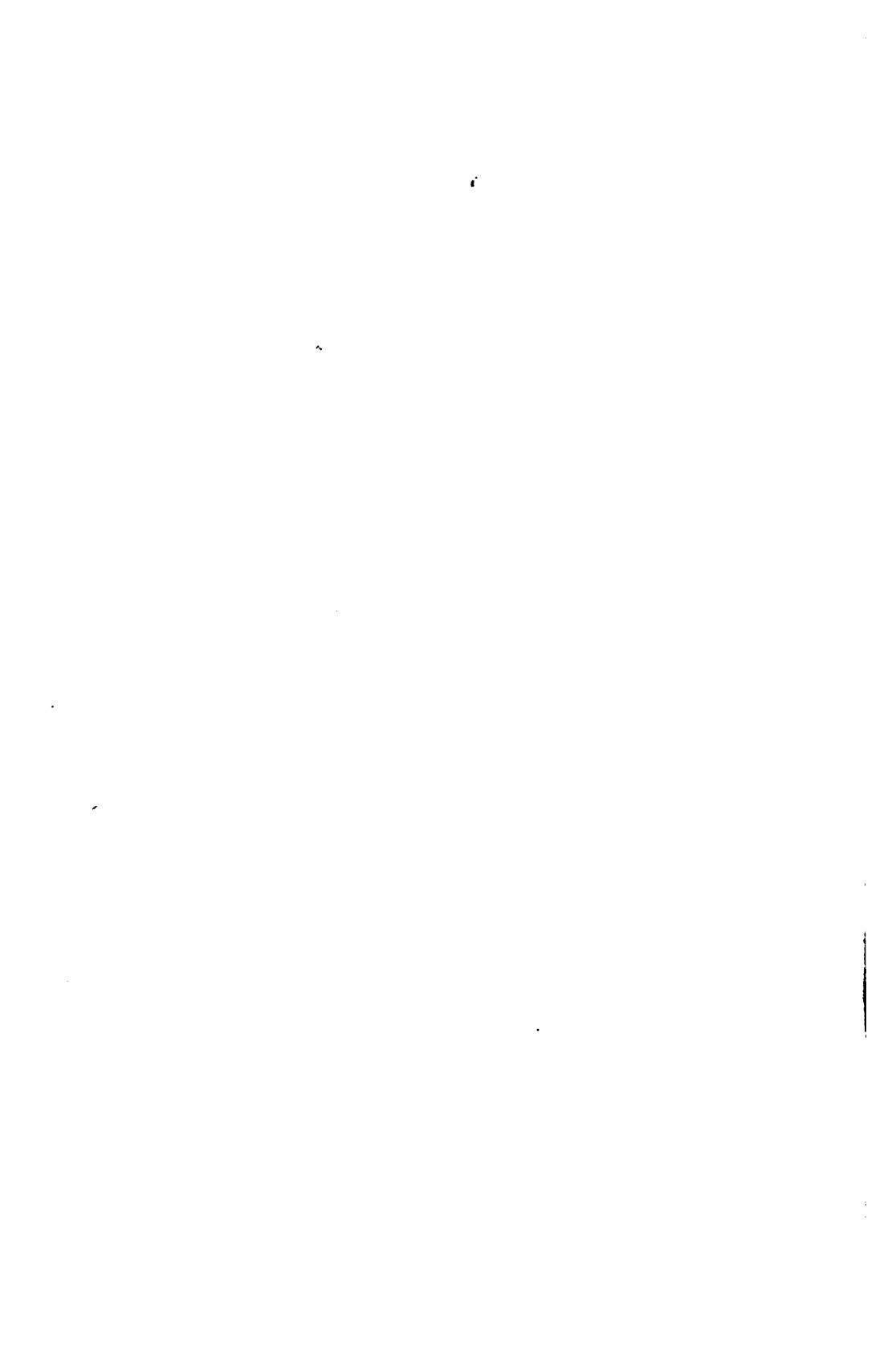
A PAPER READ BEFORE THE TRUSTEES OF COLUMBIA COLLEGE,

NEW YORK,

JANUARY 3, 1870,

BY THE PRESIDENT OF THE COLLEGE.

PRINTED FOR THE USE OF THE TRUSTEES.



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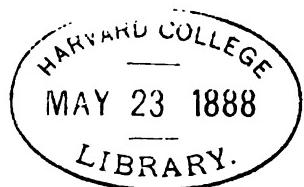
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Columbia College.

COMMUNICATION.

To THE HONORABLE,

THE BOARD OF TRUSTEES OF COLUMBIA COLLEGE:

The undersigned, president of the college, begs leave to submit a statement of certain facts in regard to collegiate education in the State of New York and the adjacent States, which seem to be of interest in their bearing upon the present and prospective condition and power of usefulness of Columbia College in its academic department.

Nothing is, unhappily, more noticeable in the educational history of our country, than the frequency with which earnest and well intended effort appears to have been misdirected, and praiseworthy beneficence injudiciously applied, in the creation of institutions having the nominal grade of colleges. In the American Year Book and National Register for 1869, edited by David N. Camp, Esq., of Hartford, there is given a list of the collegiate institutions of the United States, which embraces the names of two hundred and eighty-five of these institutions. Among the number, however, are included nearly fifty colleges for young ladies, and military or other institutes for young men, which have no proper place in such a list; besides which, there are about thirty collegiate schools under the direction of the Fathers of the Roman Catholic Church, half of which, at least, are probably merely training schools for boys, and are not chartered colleges, empowered to confer degrees

in the Liberal Arts. Making all the deductions which these considerations suggest as necessary, there remain, nevertheless, after all, not fewer than two hundred and twenty institutions in the country, which claim, and, so far as municipal law can bestow it, possess, the right to rank themselves as schools of the highest learning, and to occupy places in the same class with Harvard, and Yale, and Princeton, and Columbia.

It will be shown in the course of the following inquiry, that the total number of students in attendance on the colleges of our country, bears usually a proportion to the white population, of about one individual to two thousand inhabitants. Assuming the correctness of this result, and taking the total white population of the United States to be, in round numbers, 35,000,000, we shall see that there are about 17,500 undergraduate students, in all, now under instruction in American colleges ; or, upon an average, *eighty* students in each college. If there are any institutions, and there are some, whose numbers are largely in excess of this average, they enjoy this advantage at the expense of the rest ; and the fact, therefore, is, that the great majority of the so-called colleges have fewer than eighty students each. It is true that, in regard to many of them, this fact does not immediately appear from a cursory examination of their catalogues. Still less is it apparent in a summary publication like that of Mr. Camp, referred to above, which presents only bare totals, without classification ; for into such totals are brought together pupils in elementary schools, professional schools, practical schools, agricultural schools, scientific schools, and other institutions not at all collegiate in their character, which are more or less nearly connected with such colleges. There are not a few of this class whose principal attendance is made up of pupils pursuing what are commonly called "preparatory studies."

The effect of this unnecessary multiplication of colleges upon the character of the higher education of the country is not

beneficial. Its tendency is to put this education, to a great extent, into the hands of inferior men ; with the additional disadvantage of providing even these inferior laborers with inferior means and implements of labor. No well appointed college can be established without the investment of a large amount of capital, which, by the form in which the investment must be made, becomes immediately, in a commercial sense, unproductive. And no adequate provision can be made for the support of suitably qualified instructors, without a further large investment made in such form as to be permanently productive. Tuition fees may furnish some slight help in defraying current expenses ; but no college which depends on tuition fees alone can be well appointed, or can even long exist. But when a college has been once established, and properly provided with resources sufficient to insure its permanence, and to enable it to do the work it proposes to itself as such work ought to be done, it will be competent to furnish instruction to several hundred students as easily as to sixty or eighty. There will be, it is true, some difference in the necessary annual expense in the two cases supposed, but it will not be important. Some few additional instructors will be necessary, but no new departments of instruction ; and the increased receipts from tuition will go far to compensate for the increase of the necessary disbursements. But however much the annual expenditures of a college might be augmented, on supposition that a single such institution should take upon itself to perform all the work now distributed between three or four, it is quite out of the question to suppose that they would become equal to the cost of maintaining three or four colleges. This, at least, is quite unsupposable if the colleges concerned are presumed to be really well appointed colleges. The necessary inference therefore is, either that the country voluntarily bears a burthen, in support of collegiate education, three or four times as heavy as it need be, or that, of the institutions which bear the title and legally exercise

the privileges of colleges, a very large number are not well provided with the instrumentalities indispensable to the efficiency of educational agencies of the highest grade.

Many influences conspire to stimulate or to favor the creation of colleges unnecessarily. The most powerful of these is probably denominational feeling; but local pride has often also much to do with the matter. The last thing in many cases really considered, is the question whether or not, in fact, the public has need of such a college at all. If, however, this question were first of all carefully examined, and if public spirited and liberal men were only appealed to for aid in such undertakings on the strength of a well ascertained public want, and with the evidence of that want distinctly set before them, the erection of a new college would be a much more rare occurrence in the future than it has been in the past, and colleges when erected would be much more worthy than many of them are at present, to be called institutions for higher education.

In the analysis which follows of some of the statistics of collegiate education in the Northeastern States of the Union, will be found some evidence of what is the relation of the supply of education of this description to the popular demand, and to what extent this demand is growing or declining. It is to be regretted that minor details of interest relating to this subject are not now easily accessible in regard to former years; but an effort has been instituted which may be to some extent successful in collecting such, and these may be presented hereafter.

In the States of New York, New Jersey, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island there are twenty colleges, besides the three which belong to the city of New York. The undersigned has collected the catalogues for the current year of all these colleges except the Cornell University, Union College, and the College of New Jersey. The

latest catalogue of Union College which it has been possible to obtain is that of 1868; the latest of Princeton and Cornell University are the catalogues for 1869, those for 1869-70 not having yet been issued. These catalogues have been scrutinized by the undersigned for the purpose of ascertaining, first, what number of students are actually in attendance upon those institutions from New York city, and what number from Brooklyn, Staten Island, Jersey City, and Hoboken; which places have been classed together as being substantially parts of the city, though not under the same municipal government: and secondly, to what extent do the several colleges named derive their numbers from the States in which they are situated, or from the joint territory of the seven States, and to what extent are they recruited from more distant communities.

In the following table will be found succinctly presented the results of the first of these inquiries. As it respects one of the institutions included in the list, an explanation is necessary. Cornell University embraces nine distinct schools, of which one only—the School of the Liberal Arts—corresponds to the American college. Another—the Elective School—permits to the student the study of the classics if he chooses to pursue it; but the rest, such as the School of Agriculture, the School of Engineering, the School of the Mechanic Arts, etc., are to be regarded as schools of special or professional education, and ranked in the class to which our School of Mines, and the Sheffield Scientific School of Yale College, belong. In the preparation of the table therefore, so far as this institution is concerned, all students are excluded from the comparison who belong to these special schools, and pursue practical or scientific courses of study of which classical literature is not in any manner a part.

Students from New York and its environs in the several colleges of New York, New Jersey, Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island:

Name of College.	Students from New York City.	Students from Vi- cinity of New York.	Total.
Union (1868)	0	0*	0
Hamilton (1870)	3	2	5
Madison "	5	7	12
Genesee "	0	1	1
Hobart "	1	1	2
Rochester "	1	4	5
Cornell (1869)	7†	2‡	9
Harvard (1870)	19	5	24
Williams "	7	8	15
Amherst "	5	4	9
Tufts "	0	0	0
Princeton "	10	8	18
Rutgers (1870)	3	3	6
Yale "	38	17	55
Trinity "	3	1	4
Wesleyan "	10	9	19
Brown "	0	1	1
Middlebury "	1	0	1
Univ. of Vermont. "	0	0	0
Dartmouth "	2	2	4
Total	115	75	190

The inquiry has not been extended to Maine on the east, or to the States west of New York and New Jersey, partly for want of material, and partly because, from a very thorough examination of this statistical question for the year 1864-5, by D. J. Pratt, Esq., Assistant Secretary to the Regents of the University, published in the Proceedings of the University Convocation for 1865, New York City appeared at that time to furnish no students to the colleges of the first-mentioned State, and only three to Pennsylvania, seven to Ohio, and one to all the rest. Assuming, then, that, besides the

* 1 Scientific. † 1 reg.; 6 irreg. ‡ irreg.

115 shown in the foregoing table to be sent out of the city at present, there are a dozen scattered elsewhere, the number of students from New York now in attendance upon colleges at a distance is only 127 in all, and these are distributed in such a manner as in general to indicate the existence of special reasons for sending them abroad, other than a want of confidence in the colleges of the city. Such reasons may be found, first, in the denominational character of the distant institutions; secondly, in the natural partiality of parents for the institutions in which they were themselves educated; and thirdly, in the presence, in the several university towns, of relatives of families in New York. It must be remembered that a very large number of our fellow-citizens are natives of the country and not of New York, and that they have only made the great metropolis their home after having completed their education elsewhere, and having attained to adult years. These have left behind them many ties of kindred which continue to bind them to the scenes of their earlier life, and render it natural and convenient for them to provide for their sons an educational career identical with that which they themselves pursued. A further manifestation of the attachment of these graduates of rural or distant colleges to the institutions which fostered them, is exhibited also in their spontaneous association here into permanent clubs, which annually meet to keep alive the pleasant memories of academic life. That out of a community embracing a million of souls, a little over a score of young men per annum (for this number would suffice to maintain the present state of things) should be determined to seek collegiate education at a distance, rather than at home, cannot be considered surprising. But this phenomenon is not a new one, appearing for the first time to day. If records were accessible, it is believed it would be found that New York has always sent to distant colleges a number of students bearing as great a proportion to its population as at present, if not a greater. In regard to the institution which figures most conspicuously in the foregoing table, the undersigned happens to have such records in his possession,

consisting of a series of annual catalogues extending from the academic year 1824-5 to that of 1836-7. In the fall of 1824 there were fifteen young men from New York in Yale College. This city contained then 240,000 inhabitants; now there are only thirty-eight, though our population has become not less than 900,000. In 1830 there were twenty-one New York undergraduates in the same college. The population of New York was then 312,000. If the proportion had been maintained up to the present time, there ought to be sixty or more New Yorkers in Yale College this year instead of thirty-eight.

The report of Mr. Pratt referred to above furnishes us a complete exhibit of the state of the case in regard to the general question under consideration, as it stood five years ago. Mr. Pratt found, from an examination of the catalogues of all the colleges concerned for the year 1864-5, that the city and county of New York sent in that year to New England colleges seventy-seven students, to New York colleges one hundred and eighty-nine students, to New Jersey colleges eighteen students, to Pennsylvania colleges three students, to Ohio colleges seven students, and to Michigan colleges one student. In order to ascertain the number sent out of the city, it is necessary to deduct from the one hundred and eighty-nine in New York colleges, the number from the city and county who were then attending Columbia College and the New York City University. The College of the City of New York, then called the Free Academy, was not considered by Mr. Pratt. From the contemporaneous catalogues of the two institutions mentioned, it appears that there were in attendance at Columbia College, from the city and county, one hundred and ten, and at the University thirty-two; in all, one hundred and forty-two; which number, taken from one hundred and eighty-nine, leaves forty-seven, as the number sent to the country colleges of New York from the city in 1864-5. Mr. Pratt's results are presented, for the purpose of direct comparison, along with those above given for the present year, in the following succinct statement :

Students from New York City in attendance on colleges not in the city.

Year.	In colleges of New England.	In colleges of New York State.	In colleges of New Jersey.	In colleges of other states.	Total.
1864-65.	77	47	18	11	153
1869-70.	85	17	13	12*	127

These numbers make it apparent that fewer students are sent from New York to distant collegiate institutions at the present time than were so sent five years ago. The difference is considerable. It appears, also, that the falling off in the numbers sent to the colleges of the State of New York has been striking, while in the number sent to the New England colleges there has been a slight increase. The comparison more than confirms the opinion expressed above, that there always has been, and for obvious reasons there always must be, a considerable number of young men sent annually out of this city to seek collegiate education elsewhere. But so far as it goes, it strengthens also the inference which would be drawn from the comparison made above between the earlier and later catalogues of Yale College, viz., that the number of students so sent abroad does not grow in equal ratio with the increase of the population of the city.

Having, as the result of the inquiry above detailed, ascertained the number of young men belonging to this city and its vicinity who are now in process of acquiring a liberal education in distant institutions, we have but to add the number actually at present in the colleges within the city itself, in order to determine the total number of college students which this community at the present time furnishes. We may then, perhaps, find means, from the documents before us, of ascertaining whether or not it is true that the proportion of college students to the total population is less in the city than in the country. The im-

* Estimate.

pression of the undersigned has hitherto been that this is really the case, but the result of the present inquiry has not confirmed it. At the same time the important fact continues to be increasingly evident, which was first stated after an examination of the statistics then accessible in the annual report of the undersigned to the Trustees in 1866, that everywhere throughout the country, that system of general mental culture which is to so large an extent dependent on the careful study of classical literature, and which has been so long believed to be indispensable to finished scholarship, is losing ground from year to year in the favor of the people ; and, consequently, that the number of students liberally educated among us, in city and in country alike, when compared with the total population, is steadily diminishing. In that report, it may be remembered that an examination was made of the entire number of students in the colleges of the United States, as compared with the population of the whole country, for the years 1840 and 1860, the educational statistics employed having been derived from the American Almanac, and the statistics of population from the United States Census. A similar comparison was, at the same time, separately made for the group of States embracing New England, New York, and New Jersey. The American Almanac has since been discontinued ; the publication which has been already mentioned, under the title of the American Year Book and National Register, was commenced at the beginning of the present year ; and from this have been derived the college statistics for the year 1868. For the year 1869, the published catalogues of the colleges within the group of States just named, with one or two unimportant exceptions, have been collected ; and in regard to these exceptions, the numbers of the preceding year have been employed, with some slight estimated correction. It has been impossible to extend the examination to States further west or south, on account, in part, of the imperfection of the returns, and in part

of the form in which the returns have been made ; students in preparatory, professional, and scientific schools having been in so many instances included with candidates for the degree of Bachelor of Arts, as entirely to destroy the value of the data for the purposes of the present inquiry.

The population of the States in question in the years 1868 and 1869 has been computed, by deducing a compounding ratio of increase from enumerations made by State or national authority in the years 1850, 1860, and 1865. A State census was taken in the year last named in New York, New Jersey, Rhode Island, and Massachusetts. For these States the ratio of increase has been deduced by comparing this with the national census of 1860. For the others, the ratio has been derived from the comparison of the numbers of the general enumerations of 1850 and 1860. The results obtained are herewith given, those presented in the report of 1866 above mentioned being prefixed, for purposes of comparison :

	Population.	No. of Students.	Ratio to Population.
1840	5,037,049	3,145	1 to 1,602
1860	7,688,067	4,536	1 to 1,695
1868	7,980,000	4,197*	1 to 1,901
1869	8,017,400	4,355	1 to 1,841

* The falling off in the number of students between 1860 and 1868 is too great to be attributed to the general causes which have produced the decline in popular favor of the system of collegiate instruction noticed in the report of 1866, and referred to in this paper, and is, doubtless, ascribable to the derangement in the whole educational system of the country occasioned by the war-- a derangement the effects of which have not even yet entirely disappeared. It is on this account that no dependence has been placed, for the purposes of this inquiry, upon the carefully elaborated statistics of Mr. Pratt for the year 1864-5; as the disturbance of the law of movement was at that time excessively great. In fact, the total number of students found by Mr. Pratt in the colleges of New England, New York, and New Jersey in the year above mentioned was only 3,212, while the population of these States, taken directly from the census returns for 1865, for the States of New York, New Jersey, Massachusetts, and Rhode Island, and computed from the observed law of movement between 1850 and 1860 for the rest, was 7,868,700. This

If we consider that the number of male persons between the ages of 16 and 20 forms, as may easily be shown from the census, almost exactly one twenty-fourth part of the population, it will be seen that, in the several years above named, only one person was enjoying the benefits of a collegiate education out of the numbers severally following, viz. :

In 1840, one out of 67
1860, " " " 71 }
1868, " " " 79 } of suitable age to receive it.
1869, " " " 77 }

These numbers, however, present the case under a more favorable aspect than the truth will warrant. For it happens that many of the colleges in the group of States under consideration receive very important accessions to their numbers from States beyond the limits of their joint territory, while the collegiate institutions of other States are scarcely resorted to from these at all. It is necessary, therefore, to a correct solution of the question, that a deduction should be made of all students in the group of States considered, whose proper domicile is not in some one of these States. This can only be done by an examination of the catalogues of the several

would show a ratio of one student to every 2,450 of the population, and would indicate that only one young man in every hundred, of suitable age to be under instruction in college, was enjoying the benefit of a liberal education.

One quite noticeable fact makes itself manifest, in a comparison of the numbers of Mr. Pratt for 1864-5, with those collected by the present writer from precisely the same sources for 1869-70, which is, that while the number of undergraduate students in all the colleges of the States considered, taken together, has increased more than thirty-five per cent., or to an absolute extent of 1,143, the number contributed to the total by New York city is considerably smaller in the latter than in the former year. Mr. Pratt's total for New York city and county in 1864-5 is 295, the New York City College not being included in his list. But the attendance in the City College was as large in that year as now, and the total above given should therefore be increased by the same number (180) which is allowed to that institution in the text. New York city furnished then 475 students to the colleges of the city and country together in 1865, and she furnishes 434 in 1870. There has been an absolute falling off of forty-one.

institutions concerned, for each of the dates to which the inquiry extends. It is only for the last of these dates that the documents necessary for such an examination are at hand. From a comparison of these, it appears that, of 4,355 students present in 1869 in the colleges of New England, New York, and New Jersey, there were 744 who did not belong to any one of these States. Subtracting these from the total, there remain 3,611 properly belonging to the States under consideration, or one to every 2,220 inhabitants. Of the young men of these States of suitable age to be pursuing collegiate studies, one in 93 appears to take such a course.

If we exclude from this comparison the three extreme New England States, Vermont, New Hampshire, and Maine, which furnish a considerable number of students to the colleges of Massachusetts, Rhode Island, Connecticut, and New York, while themselves scarcely drawing any from these latter States, we shall obtain a result still more striking. The population of the States of the group remaining after this exclusion is 6,695,900, and the number of students in the colleges of these States in 1869 is 3,420—a proportion of 1 to 1,958 inhabitants, apparently indicating that one young man in 82 receives a collegiate education. But out of this total of 3,420, only 2,608 students belong to the States in question, showing that in these old and populous States, only one student is sent to college for every 2,567 inhabitants, and that only one young man in 107 is liberally educated.

We are now prepared to judge how far the opinion is correct that New York furnishes to our collegiate institutions fewer students than her proportionate quota. Of the 129 undergraduates in Columbia College at present, 93 are properly resident in the city of New York. In the University of the city, there are 34 who are also city residents. Of the more than 500 in the City College, possibly 180 are properly

collegiate students.* And to these we have to add the 127 who are scattered, as we have seen, through colleges at a distance. The total is 434.

How great the population of the city may be at the present time it is not perhaps easy to conjecture. The census of 1865, which showed an apparent falling off since 1860 of nearly 90,000, has not been regarded with entire confidence. If we place the total at 850,000 the estimate will hardly be esteemed excessive; and probably 900,000 would be nearer the truth.

Taken at 850,000, New York furnishes one student to every 1,960 inhabitants, and one young man out of every 82 receives a collegiate education. Taken at 900,000, the city furnishes one student to every 2,074 inhabitants, and gives to one young man in every 86, the benefit of a liberal education.

If we add to the 434 collegiate students furnished by New York, the 75 furnished at the same time by the immediately adjacent towns and cities to distant colleges, and twenty-five more attending on the colleges in the city from the same cities and towns, making 100 in all, we shall have a total of 534; and if we at the same time assume the total population to be 1,150,000, we shall find that these numbers give a proportion of one student to 2,154 inhabitants, and that one young man in 90 in this entire community is educated in college, either in this city or elsewhere.

We see then, that our city compares not unfavorably, in the respect manifested by her people for collegiate education, with

* The number of properly collegiate students in this institution may be inferred from the numbers present in the Senior and Junior classes, or from the average number of graduates. In the catalogue for 1868-9, there are named forty-two Seniors and forty-four Juniors. The average number of graduates from 1865 to 1869 inclusive, was thirty-one per annum; from 1860 to 1864 inclusive, it was forty-one; and from 1853 (the year in which the first class was graduated) to 1859 inclusive, it was twenty-four. The collegiate course proper occupying four years, it will be seen that the estimated number of collegiate students in the institution is probably above the truth.

the State in which she is situated, or those by which she is surrounded. Her average is superior to that which we have found for the group of States to which we have particularly directed our attention, and superior, in a very marked degree, to that of the smaller group beginning with Massachusetts and ending with New Jersey. It is not easy, therefore, to see how the number of undergraduate students in Columbia College can be materially increased, so long as the institution continues to depend wholly upon the city and its environs for its attendance, and so long as it continues to maintain severely the curriculum of study to which it has been hitherto confined. This community supplies a certain number of aspirants for the kind of culture which this curriculum furnishes. We have seen what that number is, and how it is disposed of. The reasons which determine the great majority who resort to distant colleges, are of a nature which no modifications of our system, and no new attractions which we may hold out, will avail to affect. To a large extent they are founded on considerations purely sentimental, and to a degree somewhat less, on denominational preferences; but there is no evidence that, in any appreciable number of cases, the choice is determined by distrust of the character of the institutions of the city. It is true that the feelings of young men are to some degree biassed by a wish to be partakers of that species of academic society which is only to be found in collegiate communities where students permanently reside, and form, as it were, one great family. There are even parents to whom it seems desirable that their sons should have the kind of indirect culture which such a society affords; or shall at least have those initiatory experiences of an independent life, which, while they are attended with indubitable dangers, are not, if these can be avoided, without their substantial advantages. How far this cause may be influential in increasing the number of those who pass by the institutions of this city to seek collegiate education at a distance, it would not

be easy to ascertain ; but that it has some such influence can hardly be doubted.

We are to consider, then, that this city furnishes, at the present time, a little upward of one hundred collegiate students per annum, of whom about twenty-five will resort to distant colleges for reasons beyond our control. Such has been the case to a certain and even to a larger proportional extent in past years, and such it will doubtless continue to be. The remaining seventy-five or eighty will be parcelled out between the City College, the City University, and our own institution. The City College, in virtue of certain peculiar influences, will take some forty-five of these ; and the remaining thirty-five are all that are left for Columbia College and the University. The average number of city students in the University has of late years been very small. In 1868 it was only six on an average to a class ; in the present year it is a little over eight. On the other hand, the University has a larger attendance than our college from Long Island and New Jersey.

The cause which prevents any rapid growth in the numbers of our undergraduate students, and which may even keep them stationary or reduce them still further, is evidently the existence of the college of the city. As a collegiate institution, that college is not needed ; but it does, at a great expense, the work for which the colleges already in existence at the time of its creation were amply sufficient ; and it paralyzes to a corresponding degree the usefulness of those institutions. The system by which it is recruited is one which gives it an advantage which we have no adequate means of counteracting ; and the fact that it furnishes tuition *free*, will always be a reason, though often not an avowed one, why men even of ample means will send their sons to it rather than to Columbia College. It is true that our college offers tuition also free ; but that fact by no means places us in this respect on a level with the City College ; for men do not desire to feel that they are exceptionally

favored ; and they will often reject as a gift what they would be very glad to receive if permitted to regard it as a right.* If tuition fees in our undergraduate college were abolished, it is probable that the consequence would be somewhat to increase our numbers. But the effect of offering free tuition to the indigent is not sensible.

It is occasionally said in the newspapers, and we hear it from time to time repeated in conversation, that because Columbia College has been more than a century in existence, she ought now to rival or surpass in numbers other colleges founded like her during the colonial period, such as those at Princeton, at New Haven, and at Cambridge; all of which have at present in this respect the advantage of her. Persons who thus speak do not consider, or perhaps they are not aware of, two important facts : first, that the institutions thus cited do not sensibly grow—do not generally even hold their own—if judged by the support they receive at home ; and, secondly, that colleges in great cities like New York, which provide only instruction, but not either board or lodging for the student, cannot be recruited by accessions from the country. Such is the expense of living in the city, and so difficult is it to obtain convenient and comfortable accommodations on reasonable terms, that the economical consideration alone is sufficient to decide the question. But besides this, the student thus living in lodgings in the city is in danger of being isolated from improving or desirable society, or of finding society which is neither the one nor the other ; and these are liabilities to which a judicious parent will generally hesitate to expose a youth of tender years. The consequence is, that a city college is completely cut off from that

* The tax-payers of our city, moreover, very justly claim that they *do* pay for the education of such of their sons as they choose to send to the Free College, though they pay no tuition fee. They are taxed all their lives for the support of the institution, and the amount which they thus contribute to its support in many instances greatly exceeds the total amount of the tuition fees which they would have to pay if their sons were educated in other institutions.

natural pabulum on which sister institutions more advantageously situated visibly thrive; and which maintains the general prosperity of those institutions even when a scrutiny of their records demonstrates that, in their own immediate neighborhood, they are not gaining, but are sometimes actually losing ground. For the purpose of exhibiting the importance of the consideration here presented, the following table has been prepared, showing the distribution of the students in all the colleges of New York, New Jersey, Massachusetts, Connecticut, Rhode Island, Vermont, and New Hampshire, the colleges in New York city only excepted.

NAME OF COLLEGE.	Students from same State.	Students for- eign to State.	Total.
Union, N. Y., (1868)	54	7	61*
Hamilton, N. Y., (1869-70).....	139	21	160
Madison, N. Y., (1869-70).....	58	41	99
Rochester, N. Y., (1869-70)	84	25	109
Genesee, N. Y., (1869-70).....	30	2	32†
Hobart, N. Y., (1869-70).....	45	14	59
Cornell, N. Y., (1868-9).....	87	34	121‡
Princeton, N. J., (1868-9).....	96	185	281
Rutgers, N. J., (1869-70).....	61	44	105
Yale, Conn., (1869-70).....	146	372	518
Trinity, Conn., (1869-70).....	27	65	92
Wesleyan, Conn., (1869-70)....	19	134	153
Brown, R. I., (1869-70).....	112	85	197
Harvard, Mass., (1869-70).....	372	191	563
Williams, Mass., (1869-70).....	42	117	159
Amherst, Mass., (1869-70)	118	137	255
Tufts, Mass., (1869-70).....	34	16	50§
Dartmouth, N. H., (1869-70)....	119	170	289
Univ. of Vt., (1869-70).....	37	8	45
Middlebury, Vt., (1869-70)....	38	16	54
Total.....	1,718	1,684	3,402

* The catalogue (the latest obtainable) gives a total of 137 students; but of these all but 91 are marked "left college," and 30 of those present are not classical.

† The male classical students.

‡ These are the students in the Department of Arts (40); and in the Elective Department (81). None others study the classics at all. Total in 1869, 412.

§ The classical students.

It thus appears that the colleges embraced within the seven States considered derive, on an average, half their numbers from beyond the limits of their own States; and it further appears that, in some of the most conspicuous instances, the number of the home students is very greatly inferior to that of the foreign.

At Dartmouth College, for instance, the foreign are to the home students nearly as three to two; at Yale and Trinity, as five to two; at Princeton, as two to one; at Williams, as three to one; and at the Wesleyan, as seven to one. Every one of these, Yale College included, would be a small college, and most of them quite insignificant, if reduced to dependence, not merely on a single town, but upon a single whole State. Connecticut has, at this time, nearly 600,000 inhabitants, yet she furnishes to Yale College only 146 students. New Hampshire has 350,000, yet furnishes to Dartmouth only 119. New Jersey has about 800,000, yet furnishes to Princeton only 96.

In the whole list of these colleges, there is but a single one which would rank in numbers above a bare respectability, if they were all to be deprived of the patronage which they receive from other States. That single exception is Harvard University; but it is extremely questionable whether the popular favor which seems now to distinguish that venerable institution, is not owing to her having substantially abandoned the collegiate system as it has been always understood until our day, and thrown into the hands of the student the selection of his own course of instruction. That institution is not, therefore, a proper example for present comparisons, any more than is Cornell University. In saying this, I have no intention to speak in criticism or disparagement. I have nothing at all at present to say as to the wisdom or unwisdom of the views which the governing authorities at Cornell University and at Harvard have adopted as their guide. I say only that

those views are evidently well adapted to catch at this time the wind of the popular favor, and that they have been the undoubted reason why an institution the newest in the country, springing up, like an Aladdin's palace, in a night, has been able, at the very outset, to take precedence of nearly every competitor in the contest for numbers ; and why another, the oldest of all, after having, for nearly two centuries, held only, in respect of numbers, a secondary rank, has at length succeeded, in a few brief years, in placing herself foremost of all.

Next to Cornell University, which is not here in question, and to Harvard, which is almost equally exceptional, the collegiate institution most usually cited as an example of pre-eminent popularity and success, is Yale College. It has already been shown to what a degree this celebrated institution is dependent on its distant patronage; but, until after entering upon this inquiry, no suspicion was entertained that it was not equally well supported by its patronage at home. On referring, however, to those early catalogues of Yale College of which mention has been already made in this paper, some results have been encountered very unexpected in their nature. In the year 1824-5 the total number of students in the college was 349, of whom 178, a little more than one half, were from Connecticut. The population of the State was then about 280,000, and its annual increase was slow. In 1836-7 the population had reached to something over 300,000, and the number of students from the State was then 194. The undergraduates then amounted to 413 ; the home students began to be less than one half. The ratio to the population had, however, been in the meantime pretty steadily maintained. But this seems to have been the culminating point. In the following year the number of students from the State fell to 184. In 1863 it was 146, as at present ; in 1865 it was as low as 114 ; in 1867, it had increased to 133, and now it is 146 again. The population of Connecticut being now 560,000, this State ought, if continuing to maintain the proportion

existing in 1824, to send more than 360 students to her principal collegiate institution, instead of only 146. Nor is this singular phenomenon explained by supposing that other Connecticut colleges have gained in their own State at the expense of this one. By reference to the figures given above, it will be seen that all the students from Connecticut in the three colleges of the State put together, are at present but 192 ; that is to say, are fewer than the number in Yale College alone in 1836. Measured by its local patronage, therefore, the prosperity of Yale College would seem to be declining. And when we look at such numbers as those which the catalogues of Williams, Amherst, Trinity, the Wesleyan, Dartmouth, and Princeton present, we can hardly doubt that, with opportunities to make in those cases a similar comparison of the present with the past, we should arrive at a corresponding conclusion in regard to some of them.

Columbia College cannot grow by large accretions from a distance, as Yale College has grown in spite the diminishing numbers derived from her immediate vicinity; and we have seen why this is so. It is a reason which operates equally against all those colleges in great cities which do not provide dormitories and refectories for their students. The University of Pennsylvania is an example of such an institution entirely parallel to our own. It was founded in 1755, the year after the foundation of King's College in New York. It has always had an able Faculty. Among the professors in its present Faculty of Arts are some of the strongest men in our country. It is entirely without competition, in the heart of a city of six or eight hundred thousand inhabitants; and yet the number of undergraduates on its roll for the present year is only one hundred and twenty-five.

Columbia College again cannot grow by accessions from the city itself or its immediate environs; or at least cannot grow in this way otherwise than very slowly. We have seen why also this cannot be. Collegiate institutions in the city are in excess of the requirements of the population. All the col-

legiate students from New York City, Brooklyn, Williamsburgh, Jersey City, Hoboken, and Staten Island, now under education anywhere throughout the country, put together, would barely equal in number the undergraduates in Yale College, and would fall short by forty or more of the number of undergraduates at Harvard. They are not therefore more than enough to form one considerable institution; yet while at least one-fourth of them will always be drawn to distant colleges by causes which cannot in any manner be controlled or counteracted, the city of New York provides three to share between them the insufficient number remaining. Had Columbia College been the last of these institutions to be established, it would seem as if its founders ought to feel that they had committed a serious error, and injured rather than benefited the cause of education which they sought to serve.

The college therefore cannot grow, or cannot at any rate grow rapidly, by increase either from the city or from a distance, unless it shall, at least to some extent, modify its plan of instruction in a more or less distant imitation of that of Harvard or of Cornell University. That such a modification *would* bring additional numbers there can be little doubt, inasmuch as there are now not unfrequent applications for admission to an elective course.

But, if increase of numbers is esteemed to be a thing of paramount importance, then the true course to secure it, and the only course by which it can be secured, is to remove the college to the county of Westchester, or to a greater distance, to provide for it ample grounds, to erect dormitories for the accommodation of students, and to make the academic community permanently resident on the spot. This done, the institution will not fail promptly to command that large attendance from the interior of the State, and from neighboring or distant States, which will enable it in a few years to rival the oldest and most largely thronged collegiate institutions of the country.

In making this statement, the undersigned desires to be distinctly understood as making no recommendation. The object of this communication, and the exclusive object, is to lay before the Board certain facts, some of which are new to the undersigned himself, but have been forced upon him in this investigation.

There are certain conditions of things which, if they are esteemed to be evils, legislation may mend. There are certain others against which it is vain to legislate, since they have their origin in causes above the reach of legislation. No legislation will enlarge the number of young men annually seeking a classical education in the city of New York, since that is determined by a law regulating the demand throughout the whole community. Nor can any legislation turn into the halls of Columbia College the greater part of the supply, while the public authorities are offering the same education to all who choose to receive it, free of all charge whatever.

Here, for the present, the undersigned would choose to leave this subject; but there is one question which may naturally be asked, and which he ought perhaps to answer. In the year 1860-1 the number of undergraduate students in Columbia College was 211. To this total it had risen in the course of nine years, from having been only 111, which was its lowest point, in 1851-2. But the increase was most signally marked in the two years 1859-60 and 1860-61, in which short interval of time an advance was made of forty per cent. on the previous total, or from 150 to 211. At this point the numbers remained nearly stationary for two years longer, after which there set in a gradual decline.

It is further to be noticed that, in the year 1848-9, the number of students had been as high as 136, while in the following year it fell at once to 112, and remained stationary at that point for three years. The question then is, how are the remarkable fluctuations which have been observed in the

number of undergraduate students attending the college to be accounted for?

In the first place, we notice that the sudden falling off last mentioned was coincident with the opening of the Free Academy, which took place in the autumn of the year previous to its occurrence, viz., 1848. It seems to the undersigned that the two incidents cannot be without some mutual connection. This, however, was a period when the population of the city and of its environs was rapidly increasing, which cause alone would help, with progress of time, to repair the loss. Also the new institution, after the novelty was once over, may have ceased to interfere with the college so much as in the beginning. To whatever cause or causes the effect may have been owing, the college had by 1856 more than recovered the ground it had lost, the numbers in that year standing at 144. It was at about this time that the resolution was taken by the Trustees of the college to abandon the old site, and to remove the institution to a point further up town. And the occasion of this removal was marked by an effort to transform the institution itself into something like a proper university, by erecting a class of schools for postgraduate instruction. This scheme excited the liveliest interest of educators throughout the country. It occupied much space in the public prints. The undersigned, for his own part, can testify that, having been at that time earnestly engaged in the endeavor to establish schools of Applied Science in a Southern university, he remembers no event in all the educational history of our country which ever impressed him more profoundly with a sense of its importance. That which thus attracted universal attention at a distance of a thousand miles, could not fail to produce an effect upon a public nearer at home. New York became, to some extent, and for a certain length of time, unusually excited on the subject of Columbia College. And when, as a part of the system, eminent Professors were brought

here from a distance to address great public audiences, and when measures were understood to be in progress for the early erection of a splendid college edifice in a site the most eligible perhaps that could be found in the city, it is hardly to be wondered at that the ordinary drift of affairs in the undergraduate department should have felt the influence of the swell, and should have made this effect manifest in a corresponding temporary increase of numbers. Had the experiment proved as successful in the superior department as its originators hoped, possibly this influence might have been somewhat more lasting. Its abandonment left matters to subside into the natural courses from which they had been temporarily disturbed, and the numbers of the undergraduate students gradually fell off. Three positive causes may also have conspired with this negative one, to produce the same effect. The first was the discontinuance, in 1864, of the grammar school, which had for so long a time served as a useful feeder to the college. The second was the establishment, in the same year, of the School of Mines, which, it can hardly be doubted, has drawn away some students who might have otherwise become connected with the college. And the third, and perhaps the most important, was the erection of the Free Academy, by act of the Legislature passed in 1866, into a regular college; an act demanded by no public necessity, but which has removed in the minds of some parents, and of more young men, the only objection they had previously entertained toward it as a desirable school in which to secure a collegiate education.*

* Since this paper was read before the Trustees, an additional fact has been brought to the attention of the writer by the Clerk of the Board. On the 15th of June, 1857, the fees for tuition in the college were reduced from \$90 to \$50 per annum. This being just at the close of the collegiate year, no sensible effect from it, if such an effect were likely to occur at all, could be looked for before the year following. There entered, in 1857, forty-one students to Freshman standing. In the four succeeding years, from 1858 to 1861 inclusive, the admissions to the

While presenting these considerations, the undersigned is not in the least disposed to question that the slight falling off in the numbers of the present year may be to some degree attributable to the new experiment in regard to discipline, attendance, and the mode of determining scholastic grades, which we have at present in progress. It is manifest that some parents have very mistaken notions as to the degree and kind of surveillance which it is possible for a college faculty to exercise over the students submitted to their guardianship. It seems to be thought that college authorities have it in their power to protect young men against the moral dangers to which youth are exposed, very much as a father of a family can watch over his own children beneath his own roof. Surely no impression can be more mistaken than this. There is no situation in the world in which an individual is more completely removed from all effectual restraint, whether the restraint of direct authority or that of public opinion, than within the walls of an American college. Whoever believes otherwise, however, will naturally believe that, at present, the students of Columbia College are not governed enough. Similar distrust may be felt with other parts of our system. But this system was never designed to be perpetuated if it should be proved in practice to work less satisfactorily than that which it has temporarily superseded. It certainly has not done so as yet. The experiment is an important one, and the apprehensions of the timid or the inexperience

same standing averaged sixty. On the 19th of May, 1862, the fees were raised from \$50 to \$100. Again the effect, if any, could only be estimated justly, after the lapse of a year. In 1862 there entered fifty-one Freshmen, but the admissions for the four years following reached only the average of forty-two, returning about to the point where they stood in 1857.

These facts make it obvious that the cost of tuition has not been wholly without influence upon the numbers in attendance on the college; but this influence, in the case under present consideration, was only one out of several causes simultaneously operating.

enced should not prevent us from giving it a fair trial. If it is really successful, there will have been an important and valuable point gained; if otherwise, it can be discontinued at any moment.

In conclusion, the undersigned feels it impossible to repress one sad reflection. It was a wise prevision which early laid the foundation of King's College, now called Columbia, upon this island, then occupied by but a handful of colonists, but already visibly destined to be the site of one of the world's greatest capitals. It was a judicious beneficence which bestowed on the infant institution an endowment which, though seemingly inconsiderable at the time, could not fail to grow in value with the growing educational wants of the community, and so to give to it the strength to meet those wants by enlarging, from time to time, the extent of its operations. The college has thus been always able to respond to the natural demand of this whole community, and even of the adjacent towns, for the higher education required for their young men, to the full extent which that demand might reach. Nor has there ever been anything in its organization, in its management, or in its teachings, to repel from it the public confidence. It has always been kept wholly free from any just imputation of sectarianism in religion, inculcating no distinctive theological dogmas, and extending its honors and its more substantial benefits indiscriminately to youth of all denominations. The governing Board named in its original charter embraced one minister from every denomination of Protestant Christians in the city of New York at the time, including the Dutch Reformed, the Ancient Lutheran, the French Protestant, the Presbyterian, and the Episcopalian; and this body has never been, at any time, without members representing all or most of these denominations, and occasionally others, including even the Jewish. Nor have appointments to any of the Faculties of the institution been made with reference to the reli-

gious opinions or associations of the candidates ; with the exception that, in the fulfilment of the condition of an early endowment by Trinity Church, the President is always to be a communicant of the Protestant Episcopal Church. This college, therefore, has always been, as it is now, an abundantly capable and fit agency to supply the entire demand for higher education in the city of New York ; and there is not now, and there never has been, any reason to distrust the good faith with which it discharges, or has discharged, the important trust confided to it. That the public authorities, in disregard of an existing provision so important, so valuable, and so entirely adequate to the exigency, should have, at great expense to the people, created another instrumentality to perform the very same work, cannot but be pronounced a grave error, and a departure from the most obvious principles of public economy. By this act the usefulness and efficiency of Columbia College have been to so large an extent paralyzed, that it would seem to be no longer possible for this institution to accomplish all the good of which, as a school of the Liberal Arts, it is capable, except upon the condition of absolute removal from the city. Can any person of unbiassed mind, in view of the existing state of things, and of the causes which have produced it, in view of the vast power of usefulness here accumulated, and of the narrowness of the field left it in which to be useful, repress a feeling of regret that, in the provisions heretofore attempted in behalf of the higher education in New York, there should not have ruled a more just and adequate comprehension of the exigencies of the situation, and a more intelligent appreciation of the value of the instrumentalities already existing ?

To such of the alumni, and other friends of Columbia College, as have recently interested themselves in the welfare of the institution, and suffered themselves to be disturbed by the less rapid growth and therefore seemingly less thriving condition

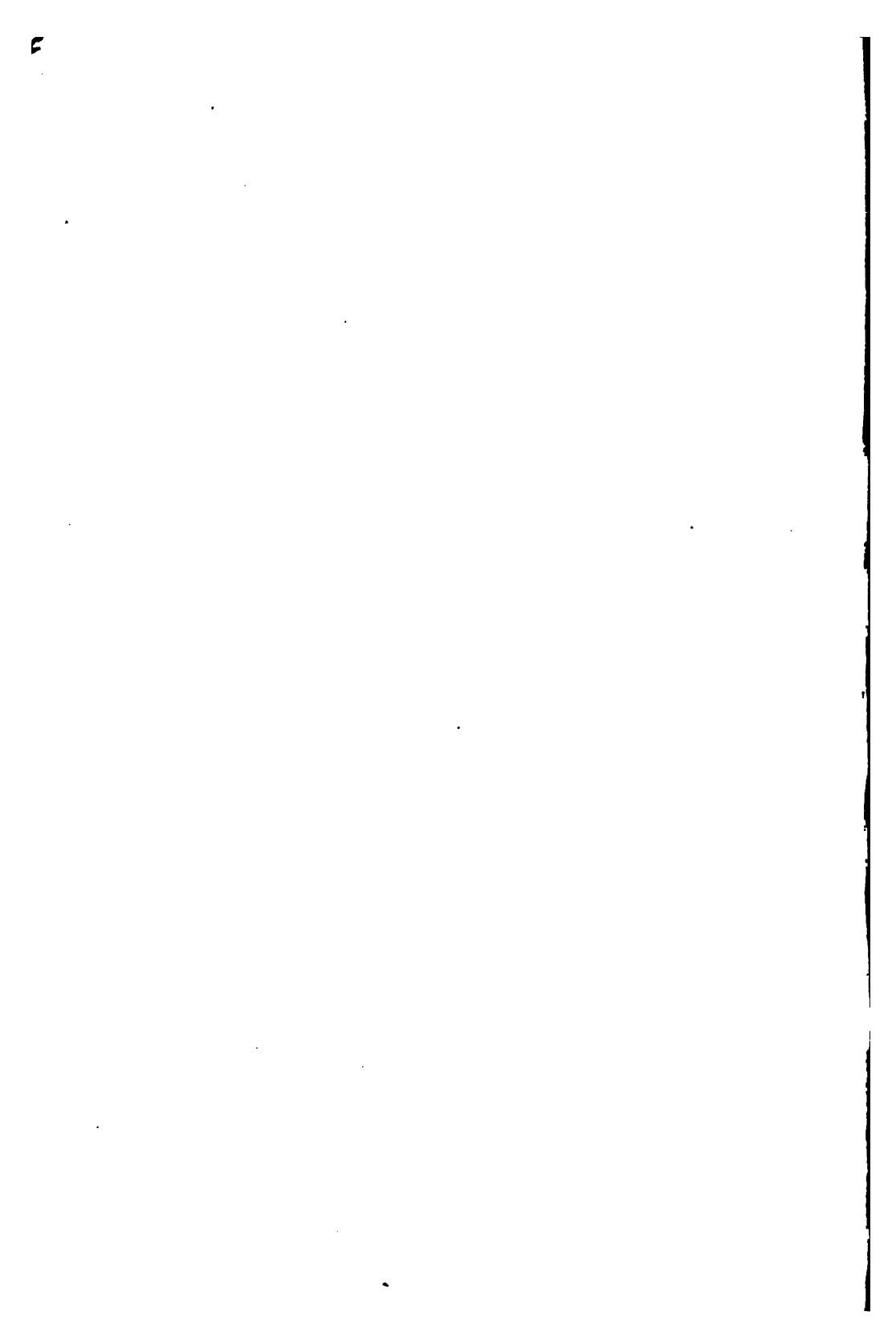
of the parent stock than of its young and vigorous branches, the professional schools, it is presumed that the facts and deductions presented in this paper will prove a sufficient reply.

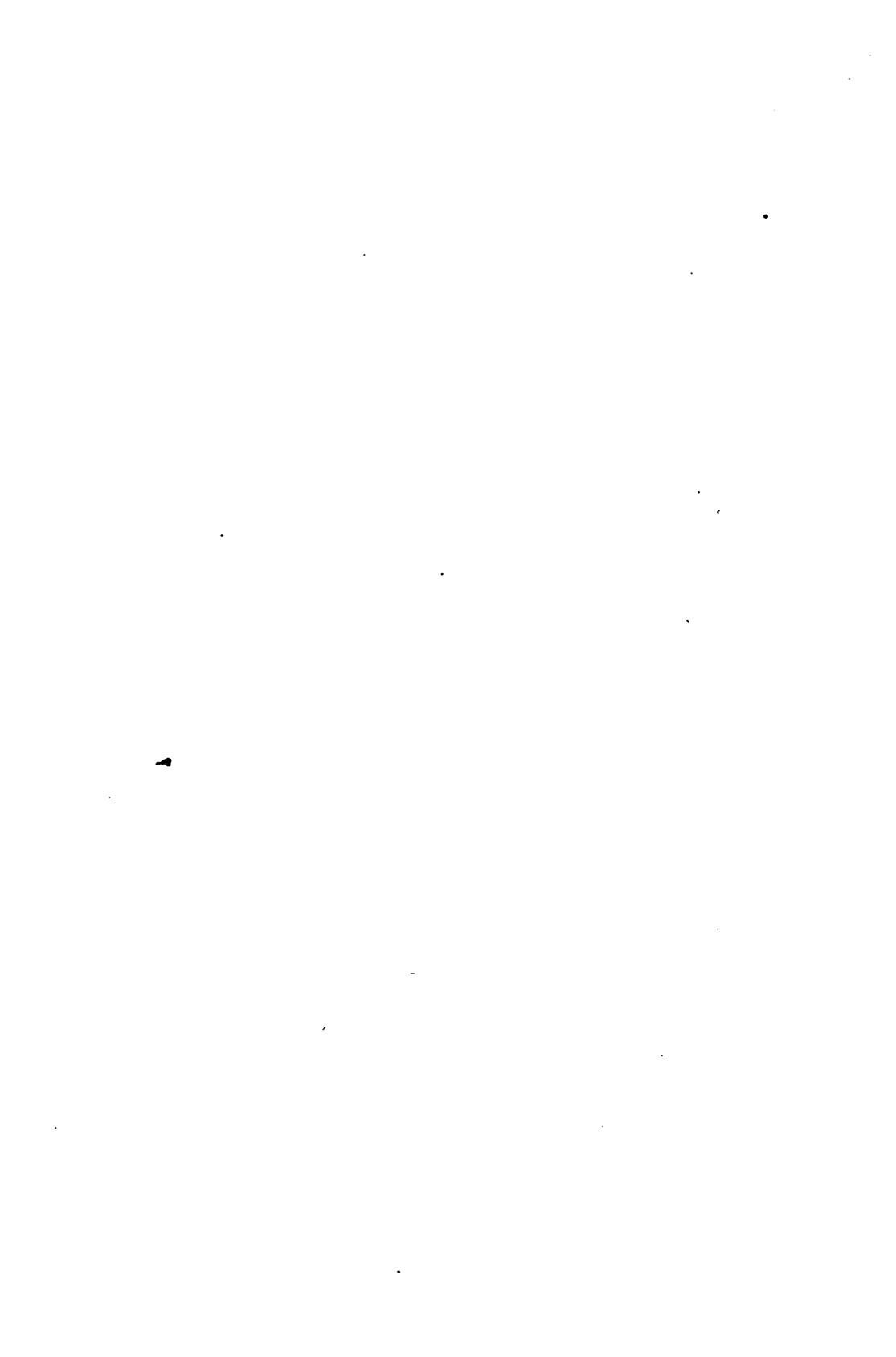
All which is respectfully submitted.

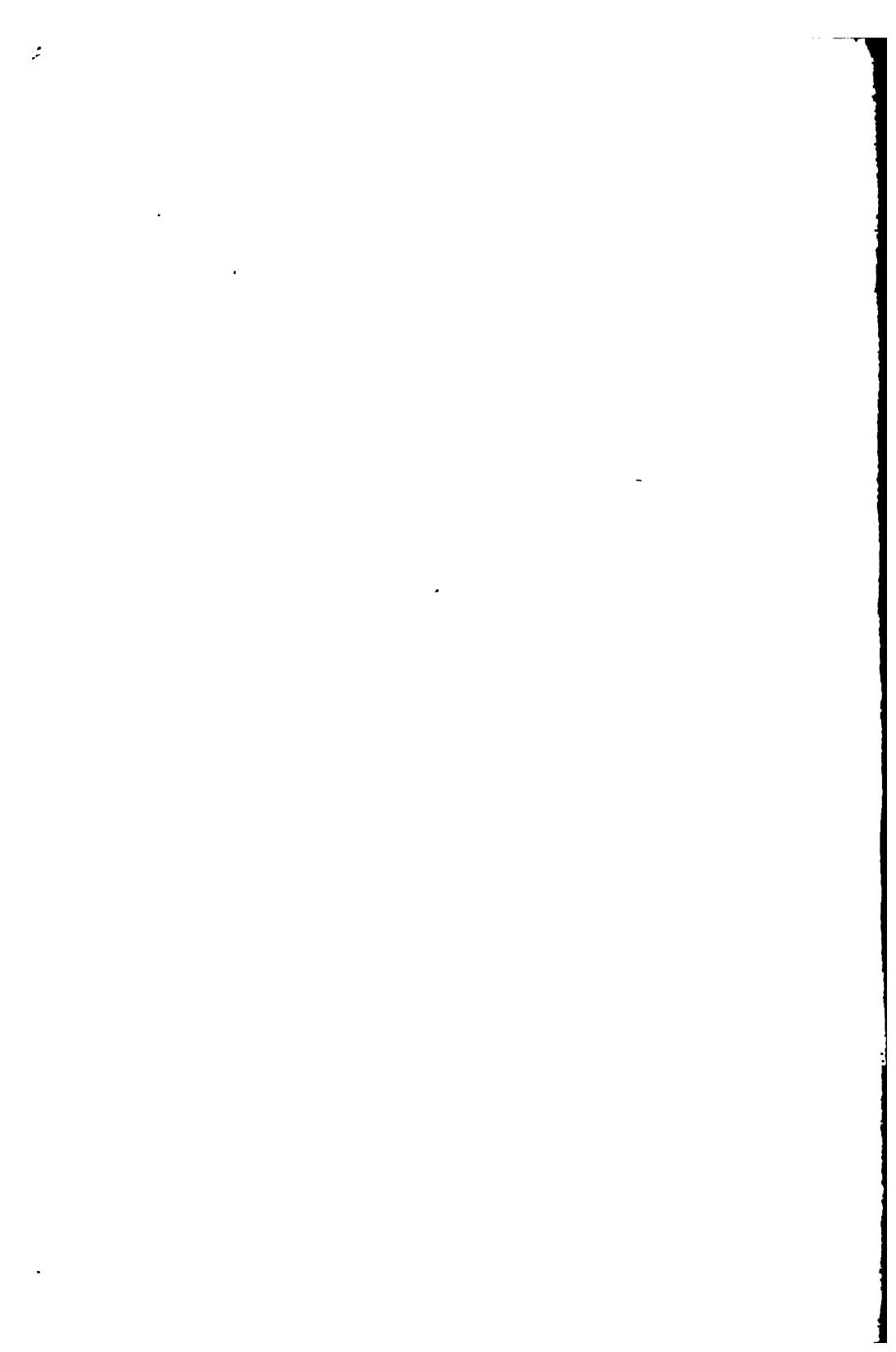
F. A. P. BARNARD,

President.

COLUMBIA COLLEGE, Dec. 30, 1869.







MODERN
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AND THE

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AN ADDRESS DELIVERED AT THE OPENING OF THE FORTY-FIRST ANNUAL
EXHIBITION OF THE AMERICAN INSTITUTE OF
THE CITY OF NEW YORK;

BY

FREDERICK A. P. BARNARD, LL.D., L.H.D.,

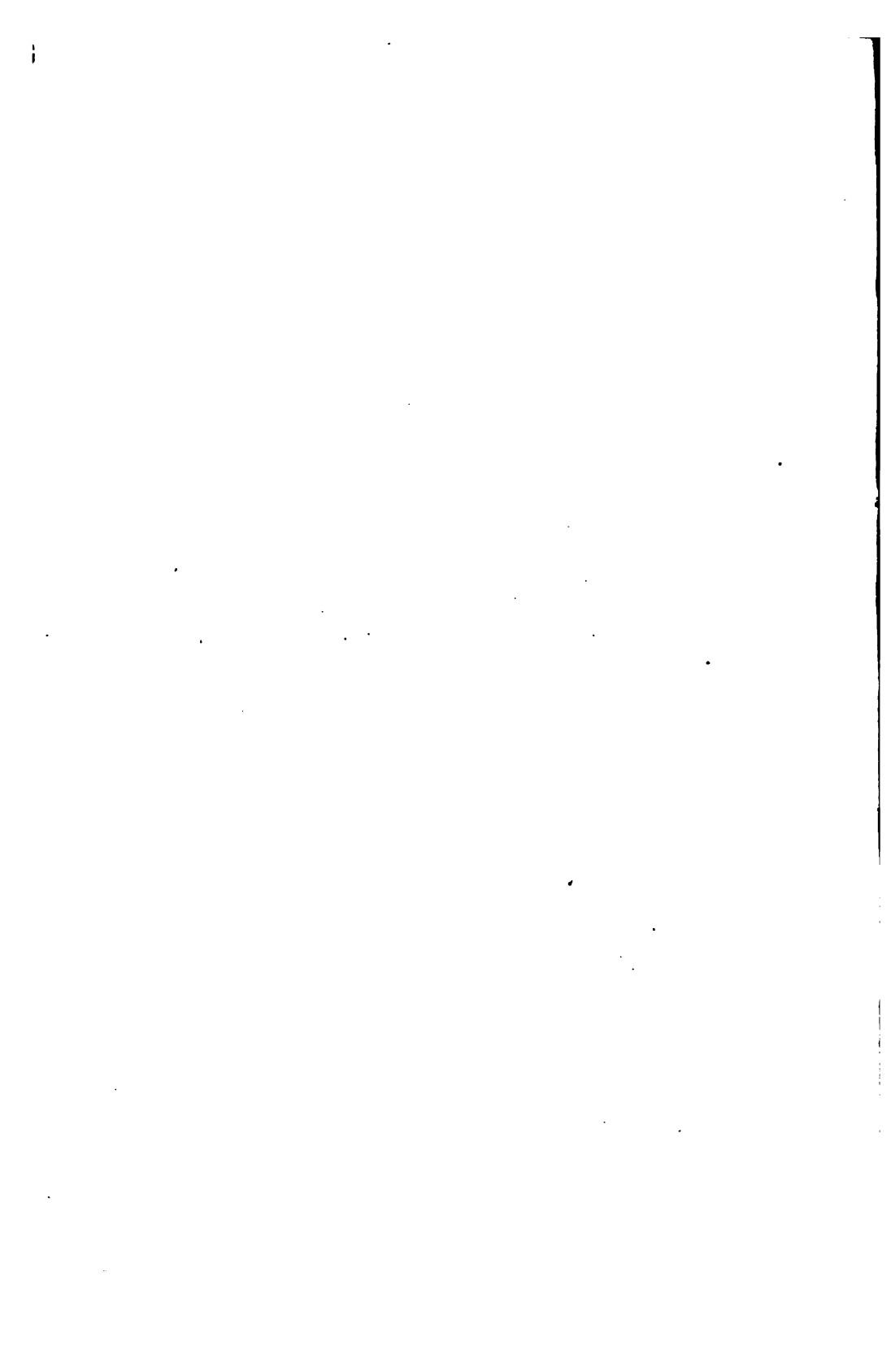
President of Columbia College, and President of the Institute.

PUBLISHED BY ORDER OF THE BOARD OF MANAGERS.



New York:
CHARLES H. JONES & CO., PRINTERS,
114 FULTON STREET.

1872.



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FREDERICK A. P. BARNARD, LL.D., L.H.D.,

President of Columbia College, and President of the Institute.

PUBLISHED BY ORDER OF THE BOARD OF MANAGERS.

New York:
CHARLES H. JONES & CO., PRINTERS,
114 FULTON STREET.

1872.

Columbia College MAY 23 1888

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A D D R E S S.

LADIES AND GENTLEMEN:

It is my pleasant duty to bid you welcome to the forty-first annual exhibition of the processes and products of American industry, made under the auspices of the AMERICAN INSTITUTE of New York. Among the goodly company before me are not a few who have honored us with their presence on similar occasions before. These, when they shall presently have had an opportunity to scan with attention the many interesting objects brought together so closely and arranged so tastefully and judiciously in this vast hall, will bear me out, I am sure, in the assertion that in point of variety, in point of value, in point of the beauty and finish of objects of art or articles of manufacture, and in point of the ingenuity displayed in the construction of machines and the efficiency exhibited in their performance under our eyes, the present exhibi-

tion is decidedly superior to all that have gone before it. There are some in this audience whose opportunities of observation and comparison extend over a long period of years. Here and there, indeed, I observe a veteran devotee to the cause of industrial improvement, who has faithfully labored in promoting the objects and furthering the operations of this INSTITUTE from the day of its foundation, and who has attended every one of its exhibitions from the very first. To such, the contrast which must present itself between that modest beginning, as it returns to the eye of the mind, and the present magnificent display, will seem almost a transformation wrought by the power of magic. This transformation is seen not merely in the greater magnitude of the present exhibition, though in this respect the present surpasses the former in the proportion of twenty, perhaps, to one, but still more in the character of the objects exhibited. For of these objects, many—so many that, if the number were definitely stated, it would excite astonishment if not incredulity—are the products or the instruments of industries which did not exist when this INSTITUTE was founded, and which, in many instances had not yet even suggested themselves to the active brains which have since conceived and perfected them.

INDUSTRIAL CHARACTERISTIC OF THE AGE.

This is a point on which I purpose for a moment to dwell, for it suggests a characteristic which distinctly and strongly marks our age, and sets it in bold and significant

contrast with all the ages which have gone before; precisely as this illustration of it in our exhibition of to-day is in contrast with that early and feeble demonstration made by our infant INSTITUTE in the year 1830. This characteristic is the extraordinary multiplication of industries and of helps to industry which is going on at this moment, and which has been going on since this century began with a rapidity of movement which increases from year to year in geometrical ratio. An exact measure of this progress it might be difficult to find; still, it is probably safe to say that, taking into consideration the birth of new arts and the increased efficiency introduced into old ones by means of new machines and new processes, the productive power of manufacturing industry has much more than doubled since this INSTITUTE was founded, and has increased ten fold since the declaration of American Independence. It is a fact which we find it difficult to realize at present, but which is nevertheless literally true, that within this brief period, the industry of Europe and America, in all its departments, has been completely revolutionized and transformed, by the substitution of machine labor for hand labor; so that all the numerous, endlessly varied, and wonderfully ingenious forms of mechanism, by means of which the operations of manufacture are at present conducted, have been created out of nothing since the UNITED STATES became a member of the family of nations; simple tools for hand use, and a few machines of the most elementary description, being all that the ingenuity of preceding ages had been able to

contribute to the advancement of productive power in the useful arts.

RELATION OF THE INDUSTRIAL ARTS TO CIVILIZATION.

In view of this remarkable fact, we are naturally led to inquire how it has happened that the inventive power of man, after the lapse of centuries of slumberous inactivity, should, just at this period of the world's history, have received so sudden an impulse, and have awakened to an activity so lively and so persistent? The arts which minister to human comfort or enjoyment are sometimes spoken of as the arts of civilization. Has our civilization kept step with the march of our industrial improvement? The assumption is often made that we may read the condition of any people as to the degree of its advancement in civilization by simply looking at the products of its industry. In accordance with this principle, Mr. MICHAEL CHEVALIER, Senator of France under the Second Empire, speaking of the picture presented in the great International Exposition of 1862, in London, where were to be seen side by side the exquisitely finished achievements of European skill, and the ruder fabrics of Asiatic, African, or South American industry, remarked that the exhibition formed a perfect map of civilization, in which the relative advancement of all the nations of the earth could be read at a glance. There is something of truth in this, but certainly it is not wholly true. Civilization has possibly reached a higher

plane to-day, in this country and in England, than it had attained in the year 1772; but certainly the difference is not such a difference as is found to exist between the condition of the industrial arts in either of these countries, at the former of the two periods compared and at the present.

HIGH CIVILIZATION COMPATIBLE WITH A LOW STATE OF INDUSTRY.

If we measure the civilization of a people by the degree of its intellectual culture or its æsthetic refinement, there have been periods in the world's history distinguished for a civilization of the very highest order, when yet the common arts of life were at a low ebb. Such was the culminating period of Grecian literary glory, marked by the production of masterpieces in philosophy, in oratory, in history and in poetry, which for more than two thousand years have commanded the admiration of the world, and which are even yet unsurpassed for power of thought or brilliancy of fancy. Such also was, a few centuries later, the Augustan age of Roman literature, an age which has left behind it monuments of genius hardly less admirable than those of Greece. During both these periods the fine arts also were cultivated to a degree of perfection which the world had never seen before and has scarcely seen since. It is indeed a faith held by many that the sculptures of Praxiteles and Phidias have never been approached in

merit by any modern production. Yet, at the very time that Athens was thus deluged as it were in a blaze of intellectual light, she had not so much as a water-wheel or a wind-mill in all her territory. Her citizens ground their wheat to flour in a species of wretched hand-mills ; employing for this purpose, as for every other toilsome service, the labor of slaves. The industrial arts were, in fact, very unequally developed among the Greeks. None attained a higher degree of perfection among that people than the absolute necessities of the civilized state demanded ; unless they happened to be arts capable of feeding the love of splendor, as well as of ministering to the natural wants of man. Thus architecture was cultivated and exalted to the rank of a fine art ; and the crumbling monuments of that early architectural period are still studied for their beautiful proportions ; while the principles of construction laid down by their builders continue to be received as law by the architects of our own time. In respect to most other arts, however, the polished Greeks were far behind such peoples as at this day we are accustomed to speak of contemptuously as half civilized. They had learned the composition of glass, and for some simple purposes they had made use of it : but they knew nothing of the use of lenses for the assistance of imperfect vision, nor did their ingenuity suffice to the invention of a simple plane mirror to furnish the dressing-rooms of their ladies. They constructed wheeled vehicles for chariots in war, and for the transportation of persons and merchandise in peace ; but they had not the sagacity

to suspend the bodies of these vehicles, and they were consequently driven to the employment of chairs or litters borne by slaves, for conveyance with any degree of comfort from place to place. The implements of their agriculture were no less rude. In its ordinary form, the Greek or Roman plow was little better than a crooked stick sharpened; and even in its most elaborate construction, as described by VIRGIL, it was ridiculously inadequate to the object intended. Nor was the condition of their carpentry any better. They possessed no implements corresponding to the modern plane; but shaped and smoothed their planks and timbers as they best could with the saw, the chisel and the adze.

THE EGYPTIAN CIVILIZATION.

But the Greeks were by no means the earliest of peoples to attain an advanced civilization, without apparently any corresponding development of the common arts of life. Judging by the magnitude and the artistic character of the architectural monuments which they left behind them in the valley of the Nile, the ancient Egyptians must have attained a very high degree of culture at a period vastly more ancient. Among these monuments, the earliest in date of all is ascertained to be the pyramid of CHEOPS, a stupendous mass of masonry covering an area of thirteen acres in extent, and in its originally perfect state rising to an altitude greater than has ever been given to any other artificial structure erected by man.

The point of time in ancient chronology to which this great monument should be assigned is matter of dispute. Some authorities carry it back more than five thousand years before the Christian era, but none bring it nearer to us than the two thousand seven hundredth year before Christ, which would place it some four thousand six hundred years before our own time. In the many centuries of darkness and violence which have elapsed since the early civilization of Egypt was blotted out, this magnificent structure has been despoiled, through the reckless cupidity of barbarian conquerors, of its once beautiful external sheathing; so that it presents now to the eye of the traveler the aspect of a rude pile of roughly shapen stones. Yet still its internal passages and chambers, protected by their difficult accessibility, exhibit all the perfection and finish which once characterized the whole; and which is such as to have drawn from expert engineers and men of science, who have made its details a study, the extraordinary testimony that this, the most ancient architectural structure in all the world, is, in its workmanship, also the most perfect. And notwithstanding this, there is no evidence that the Egyptians were any more advanced than the Greeks in the arts which we call distinctively useful.

CAUSES ACCELERATING THE PROGRESS OF MODERN INDUSTRY.

These references to the evidences of a high state of civilization existing along with a meagre development of

the common arts of life in remote antiquity, are designed to show that the giant growth of the productive power of industry in the latest of the centuries, is by no means to be accounted for on the assumption of the superior civilization of our own times. The causes must, therefore, be sought elsewhere; and in this instance as in regard to many other social phenomena, they will be found in a combination of influences which, though the silent growth of centuries, have only begun to operate harmoniously and powerfully in these recent years. Among these influences two have been preëminently efficient, and these I propose briefly to notice. First, as especially honorable to our age, I name the recognition in modern society of the dignity of labor. The other is the stimulating influence of scientific investigation upon industrial improvement.

MODERN RECOGNITION OF THE DIGNITY OF LABOR.

In those early periods of high civilization to which reference has been made, the task of providing for the daily wants of society was laid upon a servile class ; and if any freeman felt himself compelled by the narrowness of his means to engage in a mechanical occupation, he was esteemed as little better than a slave. Society was thus divided into castes. To the superior class belonged all the culture and refinement ; to the inferior all the toil. The processes of the arts of industry were followed by those who were fated to pursue them, in a dull and

spiritless routine. The operative felt no pride in his calling, and no ambition to improve its methods. There was no stimulus to such an ambition, since improvement could bring with it no honor; and whatever aspirations might arise in the breast of an individual of humble rank to mend his position, incited rather the desire to escape from his vocation than to attain excellence in it. If the statesmanship of those times was sagacious enough, as it probably was, to perceive that the wealth of a nation, and by consequence its political importance and its military strength, depend upon the productiveness of its industry, it was nevertheless blind to the truth that in order that industry may be productive, labor must be made honorable.

Upon this point we at length see clearly. Intellectual culture is prized by us no less highly than it was among the Greeks—more highly, perhaps, in a certain sense, since we desire that its benefits shall be extended to the multitudes, and not confined to a few; but we have discovered that culture and practical usefulness are not at variance, and that both in their several ways are deserving of respect. That may be a high state of civilization, but it certainly is not a healthy or desirable one, in which an aristocracy of wealth or of family monopolizes the intelligence and the refinement and the political power, while the great mass of the people, crushed beneath the weight of poverty and ignorance, are forced to minister to the wants, the comforts and the pleasures of their superiors, and are despised because they do so. Such a civilization

observed across an intervening waste of barbarous centuries, may seem all beautiful and bright, because its repulsive features are obscured by distance, while the more brilliant remain conspicuous; but it exists in violation at once of equity and of the common interests of all the classes whom it covers ; and, resting on no solid ground, is liable always to be swept away by convulsions originating among its own unstable social elements, or by violence proceeding from without.

MODERN AND ANCIENT CIVILIZATION CONTRASTED.

The civilization of the century in which we live is something widely different from this. Its tendency is to the intellectual and moral elevation, not of a favored few, but of the whole people. Yet recognizing the undeniable truth that before the mind can be cultivated or improved, the body must be provided for, it encourages and compenses with honor every honest effort to ameliorate the physical condition of the race. It accordingly esteems the man who succeeds in making two blades of grass grow where one grew before as a greater benefactor of his countrymen, than the general who wins a battle or the conqueror who subdues an empire. And extending this principle, it bestows the same honorable commendation upon every one who contrives by whatever instrumentality to produce in increased abundance any article

capable of contributing to the sustenance or the comfort of man, and of thus promoting the general welfare.

Under the influence of such a civilization, the power of invention is naturally stimulated to a high degree of activity. And accordingly, our age is the age of the inventor's triumphs. This truth becomes strikingly manifest when we consider how many names there are of men now living or of men who have been living within the last one hundred years, which are destined to be held forever in grateful remembrance for their contributions to the improvement of the useful arts; and how brief is the list of similar benefactors of mankind which can be gathered from the history of all the preceding centuries. WATT, ARKWRIGHT, ROBERTS, JACQUARD, WHITNEY, WEDGWOOD, FULTON, STEVENSON, FOURDRINIER, HOWE, McCORMICK, WHITWORTH, SIEMENS, FAIRBAIRN, BESSEMER, APPLEGARTH, HOE, BULLOCK, HIRN, ERICSSON, MORSE, HUGHES—I mentioned but a few to illustrate the readiness with which names rise to the lips; while if we go back beyond the middle of the eighteenth century we find but here and there a scattering example, such as GUTENBERG, PALISSY, or HUNTSMAN; and earlier than the fifteenth we find none at all.

The recognition of the dignity of labor, so distinctive of our time, has been the result of no sudden change in the mutual relations of the different classes of society. Revolutions in matters of sentiment are never sudden, but always involve and often largely involve the element of time. This is even true in matters of mere opinion; for

though individuals may be found impressible by argument, or may spontaneously abandon erroneous views, the instance is not on record in which a whole community has become convinced of error in a day. Prejudices are laid aside with much greater difficulty than opinions. It is probable that the prejudices of a people are never in a proper sense eradicated. They die out, if they disappear at all, in measure as the individuals who entertain them pass away, and give place to others who are less strongly biased.

INDUSTRY DURING THE MIDDLE AGES.

During the middle ages, in Europe, the state of industry was materially superior to that which prevailed under the Roman Empire. Certain changes, chiefly social, but to some extent political, crept in during this later period, by which the condition of the industrial classes was affected, in some respects favorably, and in others injuriously, the advantage on the whole being on the favorable side. The several trades became organized into societies for mutual protection and assistance. And their growing prosperity suggested to monarchs and their ministers of finance the expediency of lending them encouragement by way of strengthening the revenues of the State. Thus in France, under Louis XIV., the organized trades, or *communes*, were admitted to the enjoyment of certain political privileges under the name of "the third estate." In other parts of Europe, as in Holland, in Upper and Middle Italy, and in

portions of Germany, they attained temporary advantages of still greater importance; but these, through the jealousy as well of monarchs as of feudal chiefs, were soon wrested from them, and they were long subjected to heavy exactions; while the severe regulations by which their freedom was trammelled, repressed almost wholly the spirit of improvement. Even so wise a minister as COLBERT gave his sanction to a system which held society while it lasted as if in a cast-iron mould, making trades hereditary in families from generation to generation, and prohibiting any one from the practice of any art save that to which he was born.

It was, however, a great advance toward the recognition of the dignity of labor, when kings and ministers and barons contended as to the place to be assigned in the political and social system to the organized industries. In this contention the common sense of mankind could not fail to enlist itself more and more on the side of liberality; still, complete emancipation from the artificial shackles by which the freedom of industry was trammelled was never obtained, up to the time when the outbursting storm of the first French revolution subverted the foundation of the whole social system of continental Europe, and "liberty, equality, and fraternity" became the watchwords of the hour. Then, in the chaos that succeeded, old things passed away and all things became new. When, at length the troubled elements became again composed, industry, respected in the persons of its representatives, and freed from most of the embarrassments which had impeded its

development before, entered upon that career of wonderful expansion of which the accumulated results astonish us to-day.

INFLUENCE OF SCIENCE UPON INDUSTRIAL IMPROVEMENT.

I mentioned above, as the second of the important influences accelerating, in our day, the progress of industrial improvement, the stimulating influence of contemporaneous scientific investigation. It is an undeniable fact that nearly every important improvement which has been made during the last one hundred years in the processes or the instrumentalities employed in the industrial arts, has been due directly or indirectly to the suggestions of science. Examples illustrative of this truth are so abundant that, in a great exhibition like the present, we encounter them wherever we look. Nay, it is not necessary to this end to visit a gallery of industry. We see examples all around us, in the public streets and at home in our own dwellings; many of them indeed so familiar that we forget the source to which we owe them. A friction match, for instance, appears to us a very trivial thing; and yet it is a gift of science, and withal a very recent gift, since in the year in which this INSTITUTE was founded, the world had no friction matches. The gas, which is now so almost universally used for the artificial lighting of towns and dwellings, is another gift which science has conferred on industry, and conferred since this century began. And since the subject of illumination has

presented itself, though chosen entirely at random, there are also to be mentioned stearine and paraffine, the oil expressed from lard, kerosene distilled from petroleum, and finally, and more striking still, the powerful electric lamp adopted by France and England in their first-class sea-coast light-houses, all of these being contributions made in recent years by science to the useful arts.

Take, again, the case of india-rubber. There are many persons here present whose memory extends to the time when this substance, now so valuable, had no higher use than that which gives it its name—to efface pencil-marks on paper. Its present applications are so various as almost to defy enumeration. Among the most familiar of the articles into which it enters may be mentioned water-proof garments, portable beds, cushions, life-preservers, elastic tissues, machine-belts, buffers for railroad cars, foot-mats, floor-coverings; and, in the solidified form, knife and instrument handles, door-knobs, drinking-vessels, writing-desks, jewel-boxes, combs, pen-holders, musical instruments, and a multitude of other articles, for the construction of which it is better adapted than any other material on account of its unalterability by either heat or moisture. For the vast improvements of the present century in the manufacture of paper we are once more deeply indebted to modern science. This is true in too many particulars to admit here of detail, in the preparation of the pulp, in the expeditious processes of bleaching, and in the wonderfully ingenious machinery by which the product is turned out finished, in sheets practically endless.

Look again at the marvelous fertility in useful applications of the galvanoplastic art—an art presented by science to industry, perfect from the very beginning: and requiring of the ingenuity of inventors only to devise the means of adapting it to different conditions. Galvanoplasty has not only superseded all the old and slow and unhealthy processes of silvering and gilding, the use for which it was first made available as a branch of industry, but it has contributed at some point or other to the advancement of nearly every useful art. Printing and engraving furnish signal examples of its usefulness. It affords a simple and easy means of giving to movable type and to stereotype plates a facing of copper, or, in the later improvements, even of iron; whereby their durability is immensely increased. The service it has rendered to the art of engraving, whether on copper or on wood, is still more noteworthy. Woodcut engravings, when finely finished, are too frail to bear long, without injury, the severe treatment they receive under the letter press. The delicacy of the lines is soon lost, and the impression ceases to do justice to the skill of the artist. By the galvanoplastic process, a copper fac-simile is substituted for the original wood-cut, with the double advantage of furnishing a more durable material and of retaining the power to replace the copy by a new fac-simile when those previously used shall fail. The same expedient is resorted to when the original engraving is on metal. This original is only employed to furnish galvanoplastic duplicates for use in the press; so that when an engraving is once made,

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its durability is practically unlimited. All the large and valuable charts of the American Coast Survey, many of them embodying the results of immense labor, are produced on this plan.

But time will not allow me to multiply illustrations. I will merely name, without pausing to go into details, a few of the departments of industry not above mentioned, to which the contributions made by science have been most signal. There is the metallurgic industry, for instance, which has been profited in all its branches; as the metallurgy of iron, of copper, of zinc, of the precious metals, of aluminium, and most signal of all, of steel. There is the manufacture of sugar, from the cane and from the beet, and the process of its subsequent refinement, the whole of which has been thoroughly revolutionized within the past twenty years. There are the manufacture of leather, the silvering of mirrors, the processes of bleaching and dyeing, the discovery of new dyes, especially of the magnificent colors called aniline, the manufacture of soda ash, the power printing press, machine spinning, weaving, knitting, and sewing, the whole family of machine tools, the manufacture of brick and tiles, the artificial production of ice, the tunneling of mountains by the aid of power-drills and the formidable explosives, dynamite and nitro-glycerine, the whole system of modern transportation by land and sea, and telegraphic communications spanning almost instantaneously the world's circumference and annihilating space. I pause in the enumeration, not for want of

material, but because it is necessary to pause somewhere. In every one of the branches of industrial art here mentioned, the inventions or discoveries which give them their principal usefulness or productive power have been made since the foundation of our Government, and most of them quite recently.

SCIENCE AND INDUSTRY IN ANCIENT TIMES.

The inquiry naturally arises, why did not science come with her aid to industry at an earlier day ? Science is the creation of intellect, and intellect was actively awake in the earliest periods of history, and even in periods to which the light of history does not extend. We have already spoken of Egypt, and of the evidence her monuments furnish of an early advanced civilization. Mind must have been active then. The Egyptians must have been learned, or it would have availed little to MOSES that he was learned in all the wisdom of the Egyptians. They must certainly have cultivated letters. Probably they were not wholly neglectful of science. Unquestionably they must have been geometers and engineers, or they never could have built the pyramids, or raised the obelisks. From a protracted study of the great pyramid of CHEOPS, Admiral SMYTH has satisfied himself that they were also astronomers, and pretty good astronomers too. The Chaldeans and the Greeks of Asia Minor cultivated astronomy also twenty-five hundred years ago ; and it is asserted of THALES of

Miletus that he predicted eclipses in anticipation of their occurrence, some centuries before the golden period of Grecian literature. In Alexandria, under the PTOLEMIES, the pure mathematics were cultivated so successfully that the treatises of some Alexandrian mathematicians, as of APPOLLONIUS and EUCLID, are held in respect to this day. EUCLID'S Elements of Geometry still, indeed, maintain a place among the text-books of English and American colleges. During the same period, ERATOSTHENES, an astronomer of Cyrene, made an ingenious attempt to determine the dimensions of the earth by measuring a degree of the meridian; with what success, our ignorance of the value of the unit of length employed by him makes it difficult to judge. This, too, was the age of the illustrious ARCHIMEDES, a physicist who certainly made some signal discoveries the records of which are lost; and who is said, in the history of that time, to have accomplished results by mechanical and optical arrangements, which, even in this age, would be regarded as extraordinary. Thus we see that science, and even the sciences of nature, occupied the minds of men in periods of high antiquity; and we know that, during the same periods, literature attained to its greatest splendor; speculative philosophy especially, a subject demanding the exercise of the loftiest powers of the human intellect, having been cultivated with such success, that the teachers of that time continue still to be studied with profound interest, and made the subject of endless discussion and criticism.

ANCIENT SCIENCE WAS NOT PROGRESSIVE.

How then happened it that for twenty centuries—if we count from the Egyptian epoch we may even say for fifty—science brought to the useful arts so meagre contributions, while in this last age of ours she comes laden down with gifts every succeeding year? The immediate answer which presents itself is that science herself stood still during all those long centuries. This answer, though obvious enough, is unsatisfactory, since it only removes the difficulty one step further back, and compels us to inquire why science should have been stationary so long, and why she has been less so in later times. For this phenomenon, unaccountable as it seems at first, we find an explanation when we turn our attention to the methods of investigation employed by ancient and modern inquirers respectively in the prosecution of their researches. We find the modern methods to be such as, if faithfully pursued, must in the necessity of things, lead eventually to substantial and trustworthy results. The ancient, on the contrary, are much more likely to bewilder and lead astray, than to conduct to the truth. Such discoveries, therefore, in the sciences of nature, as were made in antiquity, unless in the case of some man of exceptional sagacity, like ARCHIMEDES who seems to have escaped the mental tendencies of his age, were usually accidental; and were hardly ever the legitimate rewards of direct inquiry. It is worth while to explain the difference.

Modern investigation then begins with simple facts, and takes exact note of what the facts are. It assumes

that these facts exist in obedience to some law, at present unknown, which makes their existence necessary. And it assumes that if we multiply observations of analogous facts under varying conditions, we shall at length detect the nature of this law. This method is called the inductive method of research. It was by means of it that the illustrious NEWTON detected the great law which governs the mechanism of the heavens. His induction was brief, but it was conclusive. He observed that falling bodies at the surface of the earth tend everywhere toward the centre. He observed that all such bodies falling from a state of rest fall precisely the same distance in a given interval of time, as for instance a second. He observed that the moon also falls continually toward the earth—that is, that she deviates from the tangent to her orbit every second by a space which would be a space fallen if she were not moving in an orbit. He ascertained by astronomical methods the distance of the moon, and computed the amount of this fall. Now, supposing that all these observed phenomena are due to a common cause, the question to be settled is, what is the law according to which this cause acts. The data suffice to determine this law; and when it is subsequently tested by being applied to the motions of other celestial bodies, their uniform accordance with it corroborates its truth.

THE DEDUCTIVE METHOD.

The ancients, on the other hand, pursued their inquiries after a method which may be called the deductive; that

is to say, they began by laying down general principles, and then proceeded to deduce conclusions by logic. As we have illustrated the former method by taking the example of astronomy, the comparison may best be made by employing the same example with this. It is to be observed that what we have to account for is the celestial motions. We begin by assuming that as the celestial system is the immediate work of the author of nature, it must necessarily be perfect in all its arrangements. Hence its motions must be perfect. Now, in regard to motion, it must be noted that motion is of various kinds, as uniform, variable, rectilinear, curvilinear, zigzag, &c., &c. All these kinds of motion cannot be perfect. From the nature of things it is evident that perfect motion must be uniform and circular. Hence the motions of the heavenly bodies are uniform and circular; and thus the fundamental law of celestial mechanics is established. It differs from NEWTON's law, and it has the misfortune of not being true; but the astronomers of Alexandria enjoyed the high satisfaction of knowing that it ought to be true, and therefore they believed it. This law, however, became to them at once a formidable obstacle in the way of astronomical progress, for it saddled them with a multitude of artificial difficulties, with which they struggled long; attaining, moreover, in the end, only a very equivocal success. Thus, taking the earth as the center of the universe, a truth which they regarded as self-evident, and observing that the planets do not, in appearance at least, move uniformly, they proceeded to build up a monstrous geometrical theory

to reconcile facts with appearances—a theory which new observations continued constantly to falsify, and which we know now cannot, by any modification, be made to represent the truth.

Chemistry, physics, physiology, and every other branch of natural science were all darkened, befogged and shackled by similar arbitrary assumptions. Even long before the inductive method had been adopted and successfully practiced by GALILEO, KEPLER, TORRICELLI and HUYGHENS, it continued to be taught, as we find set forth in the “Margarita Philosophica” of REISCH, the compendium of the scholastic science of the sixteenth century, that four elements only enter into the composition of all material things, viz.: fire, air, earth and water; and that the palpable qualities of things are but fourteen, four primary and ten secondary, which are expressed by the words hot, cold, moist and dry, for the primary; and slippery, harsh, dense, subtle, hard, soft, rough, smooth, heavy, light, for the secondary; to which, under the name of impalpable qualities, were added colors, sounds, tastes and odors. It will easily be understood what progress chemistry could make in the attempt to reason out the composition of particular things, starting from data like these.

THE INDUCTIVE METHOD TARDILY ADOPTED.

What has thus far been said, may be true as far as it goes; and yet it does not entirely solve the original

difficulty, but rather seems to set it backward a second step. How happens it, we may ask, that the inductive method of research, recommending itself as it does, when once explained, to the common sense of all mankind, how happens it that this method was so long in securing the recognition of philosophers as the true method of investigating nature? The solution of this new difficulty seems to be found in the following considerations. When men first began to meditate the problems presented in the universe, the questions which earliest and most deeply impressed them were those relating to the mystery of existence, to the origin of matter rather than to its properties, to the intimate essence of things rather than to their outward phenomena. It was, therefore, in the discussions of speculative philosophy that the mental habits of the earliest profound thinkers were formed; and in such discussions it seems inevitable that the form of reasoning shall be by deduction from general principles to particular conclusions. The habits formed in philosophical speculation would naturally be confirmed by the investigations of abstract mathematics, since these set out from axioms and exact definitions; and it was all but inevitable that the mathematics should precede physics in the early order of inquiry, since it is among the first necessities of civilization to require some system of mensuration of lines, surfaces and solids, and since mensuration exacts a knowledge of geometry. The tenacity with which mental habits once established maintain themselves,

is well known. Whether the emancipation of the sciences of nature from the tyranny of such habits would have been delayed down to the sixteenth century of our era, had no eclipse come over the early culture of Greece and Italy, may be reasonably doubted ; but, after the fall of the Western Empire in the fifth century, all literary and scientific progress was practically arrested for more than a thousand years. Even with the revival of letters, moreover, science scarcely began to revive before she encountered difficulties and discouragements before unknown, born of the superstition of the time—a superstition which looked upon each new discovery as something monstrous and criminal, due to Satanic agency ; and menaced the discoverer with the dungeons and flames of the Inquisition.

RESULTS OF THE INDUCTIVE METHOD.

It is common to ascribe to Lord BACON the modern revolution in the methods of investigation, and the origination of the inductive philosophy. But this is hardly consistent with the fact that the inductive method had been already fully inaugurated by BRAHE, KEPLER, GALILEO, and perhaps others, many years before the publication of the "Novum Organon," which it is hardly probable that any of them ever saw. It is to be borne in mind, nevertheless, than even after the inauguration of this method, by whomsoever introduced, the advance of science could not but be, for a certain length of time,

of necessity slow. The whole field lay before the investigators substantially unexplored, the most elementary truths in each branch of science were yet to be ascertained, the pioneers were few in number and the discouragements they met with were great. It is in the natural course of things, moreover, that investigation should be more productive of results as it is prosecuted further; and in the combination of these reasons may be found the explanation of the fact that a movement which began in the sixteenth century, almost imperceptibly, and which in the eighteenth had hardly become sufficiently marked to attract general attention, has in our time become the rush of a mighty current forming the most salient phenomenon of the civilization of the age. And as science has advanced, so industry has with equal step kept pace beside her. Each new discovery has created a new art or improved an old one; till looking through the whole extent of the industrial world, we scarcely encounter a machine, or a process, or a product, or an implement, which is not a form of applied science; and we find the laboratory and the workshop to be so intimately allied, that fully to understand either science or the arts, one must be familiar with both. In the laboratory we have the arts in embryo; in the workshop we have science in application.

INCREASE OF PRODUCTIVE POWER.

Let me conclude this part of my subject by adducing two or three examples illustrative of the practical effect

of this association of science with industry, in the increase of productive power. And first in order, I call your attention to the manufacture of steel, an example which is entitled to be first presented, both because of the transcendent importance of this great industry, and because its wonderful development through the improvement of its processes, has taken place, as we may almost say, under our own eyes, and has gone on with a rapidity which, even in the midst of industrial wonders, is exceptional. Thirty years ago the power of this branch of metallurgy was limited to the production of masses not exceeding two or three hundred pounds in weight. Now a single Bessemer converter will produce, at each operation, six, eight, ten, or even twelve tons. By the puddling process, masses of more than forty tons have been produced. At Essen, in Prussia, a single establishment devoted to this manufacture occupies an area of four hundred and fifty acres, one-fourth of which is under cover; and in 1866 the production of steel at this establishment alone amounted to sixty-one thousand tons, exceeding the total production of the world fifteen years before.

The inventions of HARGREAVES and ARKWRIGHT for spinning cotton are now about one hundred years old. They were produced in consequence of the inadequacy of the process of spinning by hand to supply yarns for the looms then in use, all of which were hand looms. The immediate result was a great excess of supply. The looms could not consume the yarns produced, and the natural consequence which followed was the invention of

the power loom. At present, a single operative, superintending an Arkwright machine, accomplishes the work previously done by three hundred or four hundred; and the production of woven tissues is increased in the same ratio. Of printed stuffs alone, there are manufactured in the single town of Manchester between forty and fifty millions of yards annually—enough to encircle the entire circumference of the earth. Printing was performed by hand until after the beginning of this century, some three hundred or four hundred impressions per hour being all that two men, working at a single press, could produce. The first automatic press, put in operation about 1812, increased the rapidity of production to more than one thousand per hour. Subsequent improvements carried the performance up to four thousand. In the presses thus far, the type were carried upon a horizontal bed. About thirty years ago Mr. HOE, of this city, by transferring the form to the cylinder, effected an extraordinary advance, his largest presses delivering, at need, no less than twenty thousand impressions per hour. These are impressions made on one side of the sheet only. The Bullock press, invented but five or six years ago, and shown in operation in this hall at the Exhibition of the INSTITUTE of 1870, is capable of printing on both sides of the paper, with perfect register, at one operation, and produces nearly thirty thousand impressions, or fifteen thousand sheets printed on both sides per hour. The increase of productive power over the common hand-press is in a ratio of sixty or one hundred to one. By means

of the machine-planer for wood, the rapidity with which work is turned out is increased in the ratio of twenty or thirty to one, with a vast improvement in the accuracy of the work. With the planer for metals the gain is immeasurably greater. Similar remarks may be made of the machines for morticing and dove-tailing, and of the band-saws for the execution of scroll-work, which have attracted so much attention in our late exhibitions, and will do so in the present.

The sewing-machine is an illustration of the increase of productive power which is in every household, and its wonderful capabilities are universally known. But I need not multiply examples. To exhaust the list of available illustrations would be impossible, for it is practically inexhaustible.

AMERICA IN THE CONCOURSE OF INDUSTRIES.

In conclusion, the inquiry naturally presents itself—where are we, the industrials of the UNITED STATES, in this great concourse of nations, and what is the part which we are contributing to the march of industrial improvement? The reply, I believe, will be one of which we need not be ashamed. There is hardly an industry to the progress of which we have not largely contributed. The cotton-gin, without which the machine-spinner and the power-loom would be helpless, is American. The power-shuttle, which permits an unlimited enlargement of the breadth of the web, is American. The planing-

machine is American. Navigation by steam is American. The mower and reaper are American. The rotary printing-presses are American. The hot-air engine is American. The sewing-machine is American. The machine manufacture of wool cards is American. The whole india-rubber industry is American. The band-saw originated, I believe, in America. The machine manufacture of horseshoes is American. The sand blast, of which the large capabilities are yet to be developed, is American. The gauge lathe is American. The only successful composing-machine for printers is American. The grain elevator is American. The artificial manufacture of ice, which you saw exhibited here two years ago under the name of the Carré process, was originally invented by Prof. ALEXANDER S. TWINING, an American. The electromagnet was invented, and immediately after its invention was first practically applied in transmitting telegraphic signals, by Prof. JOSEPH HENRY, an American. The telegraphic instrument introduced a few years later into public use, which has since obtained universal acceptance, was invented by Prof. SAMUEL F. B. MORSE, late one of the Regents of our INSTITUTE, an American.

At the Universal Exposition of 1867, although the space allotted to our country was limited, and our industry was very inadequately represented, two things were remarkable. In the first place, the number of awards for merit made to American exhibitors was greater in proportion to the whole number of competitors than was true of any other country except France—more than

half the exhibitors having been successful in obtaining such distinctions. Secondly, the notices of the American department of the Exposition by foreign critics were numerous, and were invariably complimentary in a very high degree. Our machines for working in metal and in wood were especially commended; and what was particularly remarked about them was their novelty and their originality. On this point the reporter of the London *Engineering* was especially emphatic. He observed that European engineers had come to regard America as ‘the natural home and native land’ of wood-working machinery; since the UNITED STATES had furnished the first models of the most important wood-working tools in general use in Europe, and since these tools, however modified in details, still preserve everywhere their distinctive principles and main features of construction “just as they were transmitted to us across the Atlantic.” And he asserts that British and continental artisans are accustomed, whenever a new desideratum in wood-working machinery makes itself felt, to look to America to furnish the desired relief; and that they are even occasionally surprised by the appearance of a new tool from the “States” before they are aware that they want it; though they very soon learn to appreciate the value of the present after giving it a trial.

BENEFITS OF INTERNATIONAL EXPOSITIONS.

And now let me ask what must be the effect of notices like these, widely circulated throughout England and the whole continent of Europe, upon the substantial interests

of our country? I say the substantial interests, though I am not insensible to the concomitant advantages which may be more properly called sentimental; the increased respect which such displays, and such critical judgments pronounced upon them, must secure for us an intelligent people, and a people among whom intelligence is honored; but I say the substantial interests, meaning thereby the enlargement of the demand for our productions, involving as natural consequences the increase of our foreign commerce, the growth of our manufactures, and the more rapid development of our vast natural resources still unimproved. This exposition was visited, first or last, by more than ten millions of people.* These notices were read, doubtless, by several millions. And these visitors and these readers were of every kindred and people and tongue and nation under the sun. Is it nothing to bring purchasers directly into contact with the articles they need? Is it nothing to bring industrials into the immediate presence of machines or

* Mr. CHEVALIER, editor of the official reports of the juries of the Universal Exposition of 1867, gives the following as the numbers of the persons admitted to the several successive international Expositions, beginning with that held in 1851, in London, viz:

YEAR.	PAYING VISITORS.	WHERE HELD.
1851	6,039,000	London.
1855	5,162,000	Paris.
1862	6,211,000	London.
1867	9,921,686	Paris.

In this last total are counted 5,500 season tickets, and 90,000 tickets giving admission for a week. Mr. Chevalier thinks these last may be counted equal to three admissions at least; so that the total exceeds ten millions, as stated above. To the number of visitors may very properly be added the number of exhibitors who were admitted free. This number was, in 1867, 50,226; and their assistants were more numerous than themselves. To put the total number of all who saw the Exposition at 10,000,000, is therefore a statement considerably within bounds.

implements or materials which reveal to them at the first glance new sources of power? Since it is self evidently true that no industry can work its way upward unless it is known of those whom it is adapted to benefit; since, therefore, extensive advertising is admitted to be an essential condition of every industrial success, what possible expedient can be conceived better adapted to create expeditiously a demand for any article having in it merit enough to recommend itself, than that of placing it before the world in a great international exposition?

THE VIENNA EXPOSITION.

I press this point a little now, for a special reason. In accordance with a purpose publicly announced by the Emperor of Austria two or three years ago, a new international industrial exposition is to be opened in the spring of 1873, in the city of Vienna. The preparations in progress throughout Europe for this occasion, indicate that in point of grandeur, the coming display will surpass all that have gone before; even that of Paris in 1867, which covered an area of more than one hundred and sixty acres, while its principal building occupied nearly forty. Six millions of dollars have been appropriated by the Austrian Government for the preliminary expenses. The other European governments are making appropriations for the transportation and installation of the objects which are to represent their several industries. Italy is said to have appropriated to this object the liberal sum of two million of francs. The Congress of the UNITED STATES has as yet

appropriated nothing. Nor has this neglect been a consequence of oversight. The subject has been brought to the attention of Congress, and, at the instance of the President, authority has been given for the appointment of a Commissioner to represent the country at the exposition, and to advise and assist exhibitors from the UNITED STATES, if any offer; but with the condition attached that the said Commissioner shall serve without pay. Is this a policy worthy of a great nation like our own? Is it a policy in harmony with the true interests of a great producing people, a people who ought to aim, sooner or later, to hold successful competition in the markets of the world with the most prolific of foreign producers? Are we not willfully suffering an opportunity to escape of adding, by means of a present outlay too insignificant to deserve a moment's consideration, millions, perhaps, annually, to the increase of our national wealth? I ask these questions because the indifference of Congress to this important matter hitherto, justifies the apprehension that no further action from that body is to be expected. I ask them, because it seems to me that the people themselves ought to be stirred up upon the subject, and ought to make their voices heard by their representatives in Washington.

It is difficult to understand the apathy which has always manifested itself in our national Legislature in regard to these efforts of the nations to stimulate industrial improvement by mutual encouragement, and by the friendly union of effort. It was so in 1851, and has been so ever since. In 1866, preparatory to the Exposition

of the following year, through the earnest efforts of citizens, backed by the cordial coöperation of the Executive Departments, a small and very inadequate appropriation was made, which, under the pressure of similar influences, was in the following session somewhat enlarged. The aid so hesitatingly given, came, unfortunately, too late to secure that full representation of American industry which was felt to be desirable; but it accomplished the object of securing, at any rate, a representation. The danger at present seems to be, that in the great Exposition of 1873 we shall have no representation at all.

The members of our Congress do not always show themselves so careless when the cause of industry is in question. Upon propositions of labor reform, the eight-hour law, and so on, they appear to be sufficiently awake and prompt enough to act. Is this because they seem to themselves to see a connection between the eight-hour law and the ballot-box? And is their indifference to international expositions owing to the fact that exhibitors in such cases are not the numerous class, the operatives, but the employers, whose numbers are comparatively few? I hesitate to impute a motive so unworthy of statesmen; but surely it deserves consideration that it is impossible to benefit an industry without at the same time benefitting all who are connected with that industry in whatever manner; and that if employers gain through participation in an Exposition or otherwise, operatives must gain also.

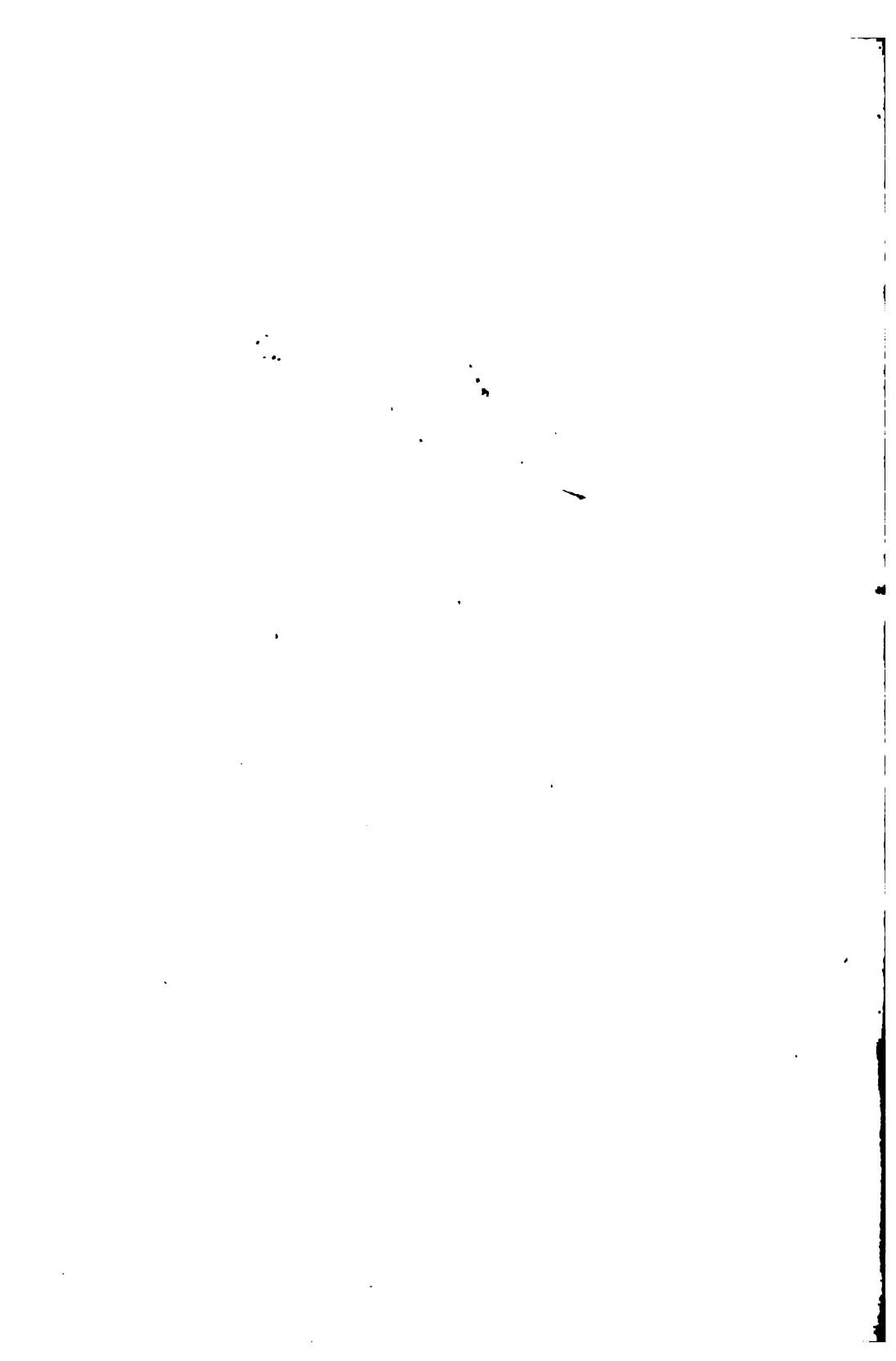
It is late now to attempt to secure for American

industry, in the Austrian Exposition, all the advantages which prompt legislation early in the last session of Congress might have secured; but it is not necessary on that account that we should lose these advantages altogether. Something may still be accomplished which is quite worth accomplishing, if Congress can be induced to make the necessary provision early in December next. I call upon all the friends of industry who hear me; I call especially upon every member of this INSTITUTE, the representative of the industry of this great city, and to a certain extent of that of the whole country, to interest themselves in this important matter, and to use their individual and combined influence for the purpose of convincing their representatives in Congress that the people desire this thing. An earnest and united effort of this character, put forth promptly at the opening of the session, ought not to fail, and it seems to me cannot fail, to be attended with success.

REMARKS TO THE MEMBERS OF THE INSTITUTE.

One word in conclusion, gentlemen of the INSTITUTE, especially to you. You have behind you an honorable history; you have before you a promising and encouraging future. On yourselves rests a heavy present responsibility. You can do much to promote and stimulate industrial progress in this city and in the country, and you can do much to discourage and retard it. You will never, I am sure, do this of design; but you may by carelessness of

duty, by inattention, by neglect, by failure to distinguish and justly to recompense merit, by giving undue honor where merit is doubtful or wanting. These are the possible errors of a loose sense of duty. They are errors not possible, I believe, with the men who hold in their keeping at this moment the interests of the INSTITUTE, or the managers who are charged with the conduct of this FAIR. In all these gentlemen I have the highest confidence ; I believe that the public have the same, as it is important that they should have. I congratulate you, therefore, gentlemen, upon the present sound and prosperous condition of your INSTITUTE, and the cheering promise it holds out of a long and brilliant career of usefulness in the future.



Barnard, Frederick Augustus Porter.

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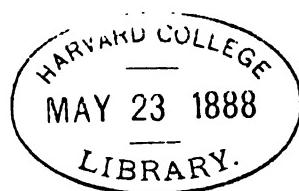
INTERNATIONAL COINAGE.

By

Frederick Augustus Porter Barnard.

Lond.
on.

1874.



Columbiabridge.

NEW YORK,

August 12, 1874.

*To the President and Members of the International
Congress assembled at Geneva.*

THE undersigned President of the American Metrological Society, established in the United States of America for the Promotion of and Improvement in Systems of Weight, Measure, and Money, begs leave, in behalf of himself and of his associate members, to submit to the International Congress the considerations embraced in the following brief paper upon the subject of an International Coinage.

No subject affecting the facility of intercourse between different peoples, and seemingly so capable of regulation by diplomacy or by legislation or by both combined, has been found to be attended with greater practical difficulties than that of fixing on a common and universally acceptable standard of value and medium of exchanges. The international conferences which have been called to consider the question in recent years, and the correspondence which has been carried on intermittently between cabinets for a much longer period of time, have resulted in nothing better than to establish the certainty that, while on one or two points of secondary importance unanimity among

nations is probably attainable, upon the principal and vital point, without securing which all other successes are unavailing, opinions are persistently and hopelessly at variance.

The points upon which unanimity is probably attainable are:—1st. The adoption of a single standard metal of coinage, viz., gold; 2nd. The adoption of a uniform alloy. After this comes the real difficulty which has hitherto resisted all efforts at solution, viz., the adoption of a standard unit of weight and of value. The nature of the difficulty is such as to limit the solutions possible to a very small number. They are easily stated, and they have all been again and again examined by every man who has studied this question in the least; the result in general being, that each has continued to maintain to the end the opinion with which he began.

THESE POSSIBLE SOLUTIONS ARE:

1. To adopt as an international unit of account, the value of some convenient coin now actually existing, with its corresponding weight in gold.
2. To adopt a value represented by no coin at present, but of which the representative in gold shall be the unit base of such system of weights as may be adopted for international use (say the metric system), or shall bear a decimal relation to that base.

3. To adopt a value of which the representative in gold shall be in simple, though not necessarily in decimal, relation to the base unit of the system of weights; and which shall itself be such that the coinage of the principal commercial nations may be conformed to it without very large changes of weight.

The first of these suggestions leaves us but little room for choice. The British sovereign, the American gold dollar, the French gold piece of five francs, and the German gold piece of ten or twenty marks are all that could be presented with any claim at all to be advanced to the dignity of the international unit. Of these, only a single one has found very earnest advocates. When, in 1863, at the meeting of the International Statistical Congress held in Berlin, a committee of that body, regarding the unification of currencies to be an absolute impossibility, contented themselves with proposing the reduction of the units to a small number, and recommended the permanent retention of the pound sterling, the dollar, the mark, and the franc, Mr. Samuel B. Ruggles, delegate to the Congress from the United States, protested against the recommendation, and advocated universal unification on the basis of the French gold piece of five francs. This unit had in its favor, that at that time more than seven-tenths of the gold coin of Europe was

founded on the basis of the franc, and there was reason to believe that nearly half the rest would soon be made conformable to that basis. The adoption of this unit was accordingly urged with great zeal, by Mr. Ruggles and others, upon the government and people of the United States. The proposition, however, met there with an opposition equally zealous; and, though pressed persistently for nine years, it has made no progress in public favor, but has rather lost. In reference to this question, the action of the German Empire in the Autumn of 1871 was regarded by all parties in the United States with the deepest interest. Had it been thought expedient to fix the unit of account for the imperial currency in accordance with the value and weight of the French gold franc, or any multiple of that value, the franc would have become, undoubtedly, the basis of the international coinage of continental Europe; and it might have been accepted, however reluctantly, by the United States. Had the imperial unit, on the other hand, received the value of a gramme of standard gold of nine-tenths fineness, it would have furnished a powerful aid to that party in the United States who are striving to obtain such an inconsiderable change in the weight of the gold dollar as shall bring the gold coinage of the country into simple relations of weight with the metric system. Germany, however, having resolved to fix the value-

of her mark at one-third of that of a Prussian silver thaler, and computed what should be the weight of her gold coins accordingly, has added one further serious element to the discord previously existing, and has rendered the prospect of success in any attempt to merge the existing national currencies in a single one which shall be international and universal, perfectly hopeless. The following brief table, showing the actual approximation and discrepancy between the gold coins most nearly approaching each other in the currencies of the four principal commercial nations, will illustrate this hopelessness more forcibly than words.

COUNTRY.	CUR.	WEIGHT, GRAMMES PURE GOLD.	WEIGHT, GRAMMES STANDARD GOLD.	VALUE IN DOLLARS.
Germany	20-Mark Piece ..	7.168	7.965	84.76.4
France	25-Franc Piece .	7.258	8.605	4.82.4 <i>th</i>
Great Britain ..	Sovereign	7.322	8.136*	4.86.5
United States ..	Half-Eagle	7.523	8.359	5.00.0

* This is the weight of the Sovereign reduced to the standard of nine-tenths alloy.

This untoward state of things, however, deplorable as it may seem, need not discourage the attempt to establish a coinage which shall be international, although it may not immediately supersede those discordant local and national currencies which are at present too deeply rooted in the associations, and too thoroughly entangled with the daily business affairs

of particular peoples, to be easily eradicated and removed out of sight. In accordance with this notion, a unit of value may be fixed on for the international coinage, in accordance with the second of the principles laid down above, viz., by giving the representative coin the weight of one gramme, or of ten grammes, of standard gold. This coin, and its multiples or sub-multiples, would have certain positive values determinable in the denominations of the several national currencies ; and should they be made a legal tender according to their values for the payment of debts in all countries, they would subserve most of the substantial ends which could be secured by the adoption of a single currency to the rigorous exclusion of all others.

Let the new coins be issued without any other denominational stamp but their weight in grammes, the reverse being distinguished by any suitable device of general significance, and there can be little doubt that they would soon be received with favor, and employed in local transactions interchangeably with those of the local coinage.

A proposition somewhat of this nature was made at the International Statistical Congress, held in Brussels in 1869, by Dr. Farr, the distinguished delegate from London ; but his proposition contemplated the creation of a new coinage, not merely to be

used optionally, the existing coinages continuing to be tolerated, but to be enforced universally ; his ten-gramme unit to be called the Victoria, and to have the value of two modified Sovereigns. With such a feature in it, the scheme could not succeed, and with such an exclusive feature no scheme ever will succeed.

But an international coinage founded on metric weight, and made legal tender in all countries, will by degrees make itself familiar to all the world. Its advantages will become daily more and more apparent to individuals among the people in all walks of life : as the old local coinages wear out, the necessity of replacing them will be less and less felt, but their places will be supplied by increased numbers of the metric coins, till at length all nations will slide insensibly into one common and universal system of currency, and will become, without knowing it, possessed of a blessing which no system of coercive legislation can ever drive them into accepting.

The society with which the undersigned is officially connected are laboring to prepare the way in the United States for the easy introduction to public favor and to general use among the people, of such a metric currency as is here recommended, whenever the nations shall be brought to concur in its adoption. To this end they are memorialising the Congress of the United States to modify the weight of the gold

dollar to the trivial extent which may be necessary to bring it into simple relations with the metric system. Copies of the Memorial recently addressed to Congress on this subject (which yet remains unacted upon) are herewith communicated for the examination of the members of the International Congress.

The object of this communication is to draw the attention of your body to the important subject to which it relates, and to solicit from you some such expression of opinion with regard to it as may possibly favorably influence the governments and peoples whom you represent in their future action regarding it.

With Profound Respect,

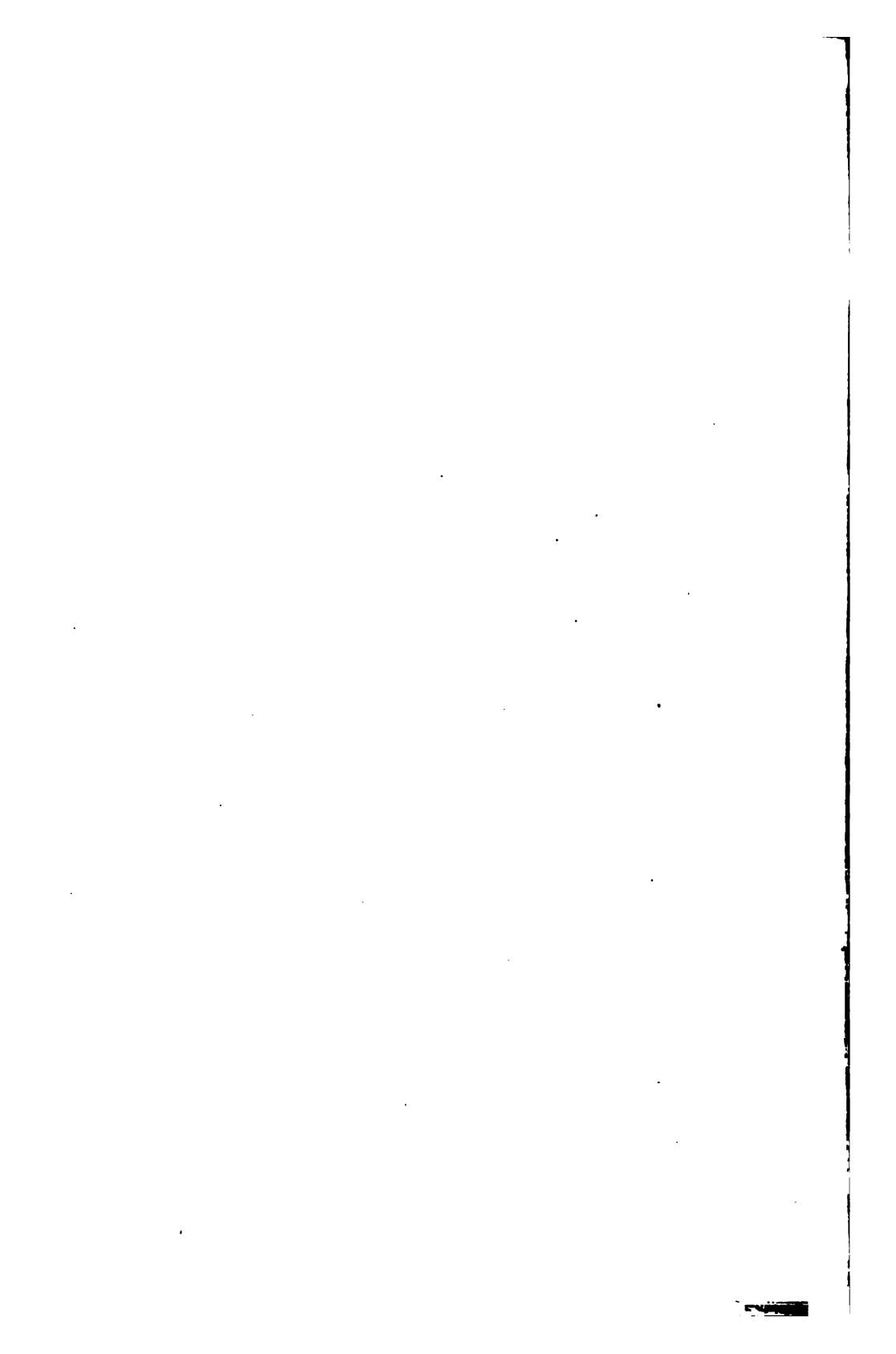
I have the honor to be,

GENTLEMEN,

Your most obedient Servant,

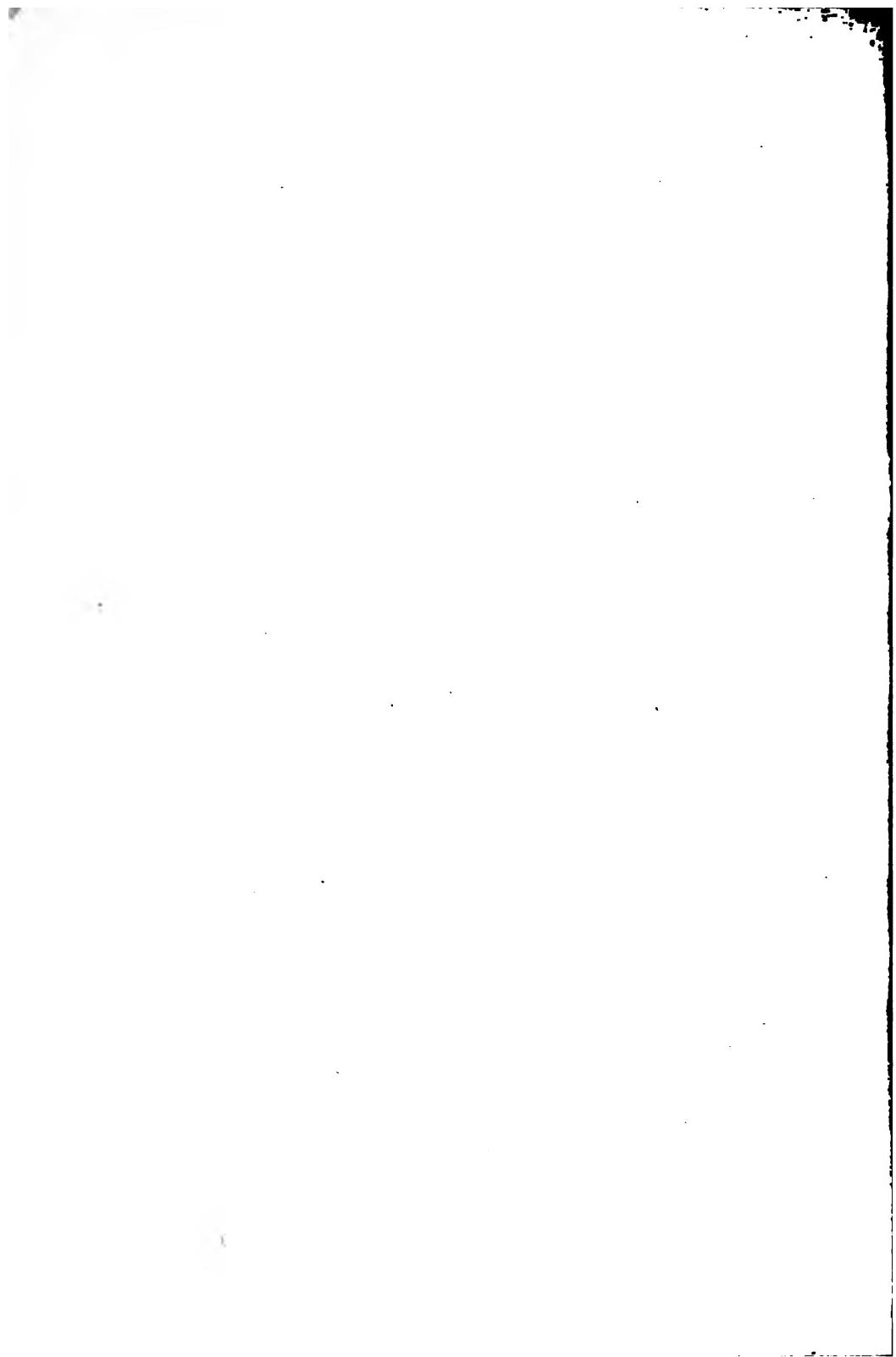
FREDERICK A. P. BARNARD,
President of the American Metrological Society.





**MONO-METALLISM, BI-METALLISM,
AND
INTERNATIONAL COINAGE.**

BARNARD.



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MONO-METALLISM, BI-METALLISM AND INTERNATIONAL COINAGE.

A PAPER PREPARED FOR

PRESENTATION TO THE ASSOCIATION FOR THE REFORM AND
CODIFICATION OF THE LAW OF NATIONS,

AT THEIR

Meeting Held in the Guild Hall, London, in August, 1879.

BY
FREDERICK A. P. BARNARD,

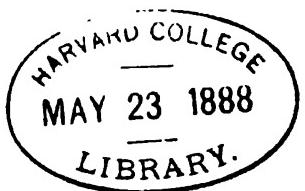
PRESIDENT OF THE AMERICAN METHODOLOGICAL SOCIETY, A DELEGATE FROM THE
UNITED STATES OF AMERICA.

— • • —

New York:

THE S. W. GREEN TYPE-SETTING MACHINES, 18 JACOB STREET.

1879.



Harvard College

MONO-METALLISM, BI-METALLISM, AND INTERNATIONAL COINAGE.

NEVER, in past history, has there occurred within a brief period, a greater apparent change in popular opinion upon an important subject in public economy, than has seemed to take place during the past four or five years, in regard to the question of a single or double standard in coinage. The experience of the world has demonstrated, in every instance in which the experiment has been tried, the utter impracticability of maintaining in circulation, side by side, coins of equivalent value in different metals, so long as coinage in both metals is equally free, and so long as coins of both descriptions are equally legal tender to all amounts. No one, I believe, is disposed now to maintain that the thing is likely to be any more possible in the future than it has been in the past, unless by means of such concurrent action on the part of all, or at least of the leading, civilized nations, as shall have the effect of withdrawing both the precious metals, gold and silver, from the operation of the ordinary laws of supply and demand as influencing values. Every one who has the slightest acquaintance with the subject is perfectly aware that, in the actual condition of things, no country can have practically, for any length of time, more than a single standard, whatever be its legislation.

In 1717, the relative value of gold and silver in England was fixed by enacting that one guinea, containing 118.65 grains of fine gold, should be equivalent to twenty-one shillings, containing 1804.656 grains of fine silver ; the resulting ratio being 15.209 : 1. The commercial ratio throughout the century following having been less than this, silver was undervalued in the coinage, and consequently disappeared almost as soon as thrown into circulation.

In France, early in the reign of Louis XV., (1726), the ratio of values between the precious metals was established by making the Louis d'or, containing 113.45 British grains of fine gold, equal to twenty-four livres, or four écus, containing 1649.80 British grains of fine silver. Hence results a ratio of 14.542 : 1 ; but as the commercial ratio during the century was greater than this, silver was overvalued and gold disappeared.

With the establishment of the metric coinage, of which the silver dates from 1794 and the gold from 1803, France adopted a legal ratio of 15.5 : 1, the commercial ratio being at the same time considerably lower. With this adjustment silver was undervalued and disappeared in its turn.

In the United States, the law of 1792, establishing the Mint, fixed the legal ratio of values between gold and silver at 15 : 1, which was at the time nearly identical with the commercial ratio. The commercial value of silver, however, gradually fell ; and though, during the forty years next after the establishment of the Mint, more than twenty millions of dollars were coined in gold, no gold coins whatever appeared in circulation. In 1834 a new adjustment of the legal ratio was made, by reducing the weight of the gold coins, while the quantity of fine silver in the corresponding silver coins remained unaltered.

The intent was to make the ratio exactly 16 : 1 ; but inasmuch as the sixteenth part of the weight of fine silver in a dollar, (371.25 grains) is 23.202125 grains, differing only by a very minute fraction from 23.2 grains, this minute fraction was suppressed, so that the legal ratio, as actually established by law, is 15.988372 : 1. The commercial value was at this time about 15.80 to one. It rose until, just before the Californian discoveries of gold, it reached 15.83 : 1 ; but, under the operation of the statute, silver was undervalued in the coinage, and the amount in circulation so considerably diminished, as to occasion inconvenience in the petty transactions of everyday life. After the Californian discoveries, the relative value of gold fell, and five or six years ago the commercial ratio of values between the two metals stood at about 15.38 : 1. Silver dollars were at this time worth three or four per cent more as bullion than as coin, and by an Act of Congress, passed in 1873, their further coinage was prohibited.

The embarrassment growing out of the failure of these successive attempts, and of all others similar, to maintain in free circulation a mixed currency of gold and silver, where coinage in both metals is equally unrestricted, and both are legal tenders for all amounts, and especially the inconvenience in small transactions of an insufficient supply of fractional coinage in silver—an inconvenience experienced in England during all the eighteenth century, in France during a portion of the nineteenth, and in the United States from 1837 to 1853, led in each of these countries to the adoption of a remedy which, in one of them, was the abandonment avowedly, and in the other two, the abandonment practically, of the principle of the double standard.

In England, by an Act of Parliament of 1816, gold was

declared to be the sole standard of value in coinage, and a subsidiary coinage of silver was created for the ordinary small transactions of daily life, of reduced weight, and legal tender, only to a limited amount. Comparing this coinage with the gold coinage of nominally equal value, the ratio is only 14.28 : 1, which so largely overvalues the silver as to prevent its exportation or conversion into bullion. As a security against redundancy, no silver is coined except for the government account.

In the United States, by Act of Congress of 1853, a similar subsidiary coinage of silver was provided for, embracing only fractions of the dollar, the weight being diminished so as to make the mint ratio between the metals 14.88 : 1 ; while between the silver dollar and the gold coins, the ratio of 15.988 : 1 continued to be maintained. The silver dollar was, however, practically non-existent. For the sixty years next following the establishment of the Mint and extending to the date of this Act of Congress, the total coinage of silver dollars had been but two and a half millions. For half this period, from 1806 to 1836, there had been no coinage of silver dollars at all. At the date of the so-called demonetization of silver in 1873, the total coinage of silver dollars from the foundation of the Government, had been but a trifle over eight millions. Within a single year after the Remonetization Act of 1878 had taken effect, there were coined three times as many silver dollars of the United States as had ever before existed. The law of 1853 made the subsidiary fractional silver legal tender to only a limited extent. The silver dollars, if there were any, continued to be legal tenders to all amounts.

In France the restoration of the minor silver coinage, which had disappeared under the operation of Gresham's law and the legally established ratio of 15.5 : 1, was

effected by the issue of a new silver coinage, debased in quality, instead of being degraded in weight as in England and the United States. By the quadripartite treaty entered into in 1865 between France, Belgium, Switzerland, and Italy, and subsequently extended to the Pontifical States and Greece, commonly called the Latin Union, an issue of silver coins below the value of five francs was authorized, containing a less proportion of fine silver, and a larger proportion of alloy, than the legal-tender coins, the weight remaining unaltered. The mint ratio between these debased pieces and gold was made equal to 14.38 : 1. The five-franc pieces continued to be legal tender to all amounts, the subsidiary small coins being so only to a limited extent. But the five-franc pieces being worth more as bullion than as coin, were no longer in general circulation.

Such was the state of things when, in 1867, the "international monetary conference" called to deliberate on the possibility of an unification of the monetary systems of the world, was assembled in Paris. The great international exposition of the products of the world's industries was in full progress at the same time ; and the imperial commission directing the exposition organized also an international committee, charged with the more comprehensive duty of considering the possible unification of the metrological systems as well as of the monetary systems of all nations. In the first mentioned of these bodies were embraced representatives of nineteen different powers, and in the second, those of twenty-two. Among these powers were the gold-standard countries, Great Britain, and Portugal ; the silver-standard countries, Austria, Prussia, Russia, Sweden, Denmark, and the Netherlands ; and the double-standard countries, France, the United States, Italy, Switzerland, Spain, and

Belgium. Upon the question of standards, therefore, every interest was adequately represented. The monetary convention entered upon their deliberations with the assumption, formulated by their presiding officer, and accepted without dissent by all the members, that an unification of the monetary systems of the world is desirable. They then proceeded to consider in succession the several questions which bear upon the possibility of such unification, for the purpose of excluding impracticable conditions. Among these were the questions of a single standard of silver, a single standard of gold, and a double standard. The decision against a single standard of silver was unanimous. The single standard of gold received the vote of every state except Holland.

In the international committee appointed by the imperial commission, the result was the same. By an all but unanimous vote, it was resolved that an international coinage to be current and legal tender everywhere, and to all amounts, ought to be created ; that this international coinage ought to be of gold, and furthermore that "the system of two different monetary standards should be discontinued wherever it exists."

It is hardly necessary to say that the two representative bodies whose conclusions are here given, were composed of men selected for their peculiar fitness to decide on questions of financial interest. Their concurrent and nearly unanimous opinion may therefore be taken as expressing the view all but universally entertained twelve years ago by authorities in finance, on the question of a double or single standard in a system of coinage.

Still further evidence of the prevalence of this view was furnished in the course of the few years immediately succeeding, by the practical adoption of the gold standard

in the Netherlands, Denmark, Sweden, and the German Empire, and by the abandonment of the double standard in the United States (where for forty years preceding, it had had no real existence), for the gold standard only. This was a progress which, if it did not directly promise an early realization of the much desired unification of monetary systems, removed to a certain extent one of the most serious obstacles in the way of the accomplishment of that result. As such it was regarded with a satisfaction which, until sometime in the year 1876, appeared to be all but universal. During the year or two preceding this, the price of silver bullion in the market of London began seriously to decline. This fall in the value of silver was naturally enough ascribed, in great measure, to the attempts made by Germany to dispose of the large amount of silver bullion proceeding from the calling in and melting down of her very large superseded silver coinage. It was this cause indeed which probably produced the first shock in the market ; but the effect would have been much less sensible had there not occurred simultaneously a greatly diminished demand for silver in the east, and had not a paper currency taken the place of all coin, both of gold and of silver, throughout Austria, Italy, and the United States. In the country last named, a great clamor immediately arose. The depreciation in the value of silver was pronounced to be an immense national disaster ; and though the legislation at Washington, discontinuing the coinage of a dollar which had not been seen in circulation for forty years, at a time when no coin whatever had been in use for twelve, had had nothing to do with this result, and could not in any conceivable way have had any thing to do in producing it, the grave calamity was attributed by noisy politicians almost entirely to the demonetization of silver by the coin-

age law of 1873. Astonishing as the fact will seem ten years from this time, this delusion became so widely prevalent in the United States, as to lead to the repeal early in 1878 of the law discontinuing the coinage of the silver dollar, and to a provision for its re-coinage with a rapidity sufficient to tax the capacity of all the mints, making it at the same time a full legal tender to all amounts. At the time of the passage of this law, the dollar so coined had a value of about ninety cents. The effect of the legislation upon the price of silver was wholly imperceptible. During the eighteen months or more that the law has been in operation, the value of the dollar has fluctuated between eighty-four and ninety cents, being usually nearer the lower limit than the higher ; and at this present writing it is about eighty-seven and a half cents. Under the operation of the legal-tender law, it passes as yet in the liquidation of obligations for one hundred cents ; but this is because it has not yet been produced in sufficient numbers to drive out the gold. Should the existing laws remain in force unmodified, the lapse of the United States from a gold to a silver standard is inevitable, and its occurrence is only a question of time. Should the propositions now before Congress prevail, to make the coinage of silver entirely free, and to issue to depositors of silver bullion, certificates of value received with the legal-tender character, the lapse will be immediate.

France, being a double-standard country, and having at this time a large amount of legal tender silver coin in the vaults of her bank, has secured herself against the financial disturbances which might have arisen from the depreciation of silver, by arresting further silver coinage, and locking up from circulation her present stock of pieces of five francs. If she had adopted the policy

which our silver standard politicians are urging upon us, she would long since have absorbed the silver overflow of Germany, and would now, with her mint ratio of 15.5 to 1, against ours of 16 to 1, be drawing from us our silver dollars as fast as we could coin them. It is not in the least probable, however, that all this would favorably affect the price of silver. France, at any rate, does not think so, or she would open her mint to its free coinage, and invite the holders of silver bullion everywhere to bring it to her for conversion into pieces of five francs.

The only country which has been directly and seriously injured by the depreciation in the value of silver is Great Britain, which, with her gold standard at home, and her silver standard in India, has incurred both embarrassment and loss in effecting her large exchanges between London and that distant dependency ; yet Great Britain is by no means disposed to regard a return to the double standard as a proper remedy for the evil. Mr. Goschen, the distinguished representative of that power in the international monetary conference of 1878, declared that England is firmly decided to maintain her single standard of gold. At the same time he pronounced the proposition of an universal double standard—and experience proves that a double standard which is not universal cannot be maintained—to be a thing impossible to realize, a veritable Utopia.

Mr. Goschen on the other hand believes that it would be a great misfortune if silver should be wholly excluded from the place it has hitherto occupied in the monetary system of the world. He thinks that no great harm can arise from the demonetization of silver by one or two countries, but that if this example should be universally followed, there would result a crisis more disastrous than all those of past occurrence, of which the commercial

world preserves the remembrance. He considers it therefore to the last degree desirable, not to say indispensable to the world's welfare, that some nations—perhaps we may say most nations—should preserve the silver standard or maintain the double standard if they can; but that it is no part of the intention of England to lend her aid to avoid the disaster which he apprehends from the general adoption of the course which she herself pursues.

The conclusion of the conference was in general harmony with the views of Mr. Goschen, and was as complete a reversal as possible of the decision of the similar conference held in the same city in 1867, eleven years before. The reasons assigned by Mr. Goschen for believing that the universal demonetization of silver would be disastrous, are the following:

1. Silver would no longer find buyers, and its price would fall without limit.
2. It is doubtful whether the quantity of gold in existence is sufficient to supply the needs of circulation.
3. The value of gold would rise with the fall of the value of silver, and the prices of all merchandise would be correspondingly depressed.
4. In countries in which the circulating medium is now irredeemable paper money, the return to specie payments would be rendered more difficult.

There is no one of these propositions which can be successfully maintained to the full extent of its significance. Without designing here to discuss them, it may be remarked of the first that there will always be a large demand for silver for the purposes of a subsidiary coinage. Silver in the form of bullion will also still have a value and a use in the adjustment of international differences, in which operation coin itself becomes bullion at present,

when transported beyond the limits of the country in which it is stamped.

As for the apprehension that the gold in existence may not suffice for the needs of circulation, the obvious reply is that, if by circulation is meant the actual transfer of money from hand to hand in the daily affairs of business, the danger is non-existent, for in strictness no gold is needed for the purpose at all. It is now more than seven months since all the legal-tender notes of the United States Treasury became redeemable in gold ; but no gold as yet appears in general circulation. It is nearly eighteen months since legal-tender silver dollars began to be coined. Up to this time about forty millions of these coins have been produced. The Government has made honest efforts to throw them into circulation ; but they return to the Treasury as fast as paid out, and are never seen in ordinary traffic. Our usual currency in the United States, except for petty transactions, in which silver is employed, consists of credits of the Government, and of our national banks. A reserve of legal-tender coin is of course necessary to maintain these ; but the amount of this reserve need only be sufficient to adjust differences, and to meet occasional abnormal exigencies ; since the credits are otherwise secured, and in the case of the bank credits are doubly secured, first by the mercantile paper representing merchandise on which they are issued, and secondly by the faith of the Government which guarantees their redemption. In the larger transactions of commerce, national and international, credit plays a still more important part. In fact, the substitution of credit for coin in business affairs is one of the most important labor-saving inventions of modern civilization. No better illustration of this fact can be found than is furnished by the report of the operations of the

New York Clearing House for the twenty-four years ending June 30th, 1877, as given in the annual report of the comptroller of the currency of the United States for the year last named. The total amount of exchanges effected at the Clearing House for these twenty-four years was four hundred and fifty-four thousands of millions of dollars ; being, on an average, sixty-two and a half millions daily, while the average daily balance paid in money was only two and a half millions, or four and two tenths per cent of the whole.

It is true that in Great Britain, France, and other countries of Europe, coin is used to an extent very much greater than in the United States, in the ordinary business of life. The example of this country, however, is sufficient evidence that it need not be ; and hence, when the question is whether the amount of gold in existence is going to suffice for the purposes of circulation, the answer is plain enough that there is nothing to fear on that account.

In regard to the third point, that with the demonetization of silver, gold must rise in value, with a corresponding fall in the prices of merchandise, it is sufficient to observe that the history of the last five years contradicts this presumption. In all this period, silver has been practically, though not legally, demonetized throughout all Europe—to which we may add throughout the United States also—since the remonetization law of 1878 has as yet produced no sensible effect. As demonetization in India or China is not to be anticipated, it is fair to presume that we have already experienced all the effect which this measure can produce upon the value of gold and the prices of commodities.

As to the difficulty of returning to specie payments on the part of governments now using an irredeemable paper

currency, the example of the United States is instructive. More gold has been deposited in the Treasury of the United States in exchange for notes since the resumption of specie payments in January last, than has been withdrawn by the presentation of notes for payment. If, therefore, a government desires to withdraw and cancel an issue of its paper not in excess of the wants of business, it may conduct the operation with just as much deliberation as it pleases ; but the moment the process begins, all the outstanding paper becomes as good as coin.

In regard to the price of silver, it is probably not true that the decline has been wholly owing to demonetization. The value of this metal relatively to gold has been gradually diminishing for the past three centuries. In a table of the prices paid by the London Mint since the middle of the fourteenth century, given in Hunt's Merchant's Magazine for August, 1863, it appears that, in 1546, gold bore to silver the ratio of 10 to 1. Two centuries before (in 1344) the ratio had been 12.475 to 1, and during all the intervening period silver had been gradually gaining on gold. After 1546 there went on a decline which, with slight fluctuations, continued till 1849, when the ratio stood at 15.632 to 1. Mr. E. B. Elliott of the United States Treasury, deriving his data from the prices paid in the London market, makes the ratio for this last year 15.83 to 1. Then came the Californian, and afterward the Australian, discoveries ; and the ratio fell back until, in 1862, according to Mr. Elliott, it was 15.34 to 1 ; after which the previous movement was resumed, and in 1866 the ratio became 15.46 to 1. The rapid decline which took place a few years later was due in great part to something like a panic, as was made evident by the subsequent large recovery from a point of unreasonable depression ; but the recovery was not complete and proba-

bly never will be. Remonetization may somewhat break the fall, but cannot arrest it entirely. Sooner or later, demonetization a second time will be pretty sure to follow. Mr. Cernuschi, whose conceptions of the power of law are somewhat transcendental, thinks very widely otherwise. Five hundred millions of French five-franc pieces—twenty-five hundred millions of francs—he says are now actually in existence, which, if demonetized and sold for bullion, will probably bring not more than half their nominal value. Let England and the United States join France in the double standard, and these twenty-five hundred million francs will become at once equal, he says, to so many francs of gold. He does not apparently consider that, by the same operation, the five thousand million gold francs which France equally possesses, may be pulled down in value to be equal to so many francs of silver.

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The fact is that, in the immense growth of commercial operations in modern times, silver has become too cumbersome a metal to be capable of subserving the purposes of finance upon the large scale. Forty five-franc pieces weigh a kilogram. A thousand five-franc pieces—say ~~forty~~ pounds sterling—weigh twenty-five kilograms, or more than half a hundred-weight of British avoirdupois. In the adjustment of differences at the Clearing House in New York, the average of daily payments in cash for twenty-four years was, as has just been stated, two and a half millions of dollars. It is at present three and a half millions. This, in silver dollars of $412\frac{1}{2}$ grains each, would weigh more than one hundred tons. In gold it weighs a little more than six tons. Either amount is a pretty serious load to be carted about Wall Street every afternoon ; the first would be entirely intolerable.

In the adjustment of international differences, the same

difficulty occurs. Gold will always be preferred to silver in the payment of balances, although all nations should with one accord adopt the double standard to-morrow. Under any system of legislation, gold will always be at a premium over silver for large transactions, and gold will accumulate in the creditor countries and silver in the debtor.

The degree to which commercial operations are embarrassed by the cumbrousness of the circulating medium, is due in great measure to the steady decline in the purchasing power of money which has been going on for the past three or four hundred years. In view of this fact, I am by no means of the number of those who regard all shrinkage of prices as an unmixed evil, and all inflation of prices as an unmixed good. An increase in the prices of certain commodities and not in others, is an immediate benefit to the producers, but a corresponding misfortune to the consumers. A uniform and proportional increase in the prices of all commodities, labor included, is a benefit to nobody except those who have past obligations yet unfulfilled ; but while it is a benefit to these, it is a misfortune to their creditors. If by a considerable contraction in the circulating medium of exchanges throughout the world, prices could be everywhere uniformly reduced, debtors might momentarily suffer, but the human race would in the end be greatly benefited. The constant tendency now is, and the constant popular demand is, for an increase in the volume of the currency. Should this tendency work out its natural results, an evil which is already sensible will in another century or two become very grave.

The foregoing observations are intended to be prefatory to a renewal of a proposition which I had the honor to lay before the International Code Association at their

meeting held in Geneva, in August, 1874. That proposition, though it has as yet led to no result, deserves a reconsideration in consequence of the gravity which the perplexing silver problem has assumed in recent years.

The proposition which I ventured to make on the occasion referred to, was that the International Code Association should recommend to the governments of the leading powers of the civilized world, to establish an international coinage of gold, founded on the gram-weight of gold, nine tenths fine, as the unit, to be everywhere legal tender for the intrinsic value of the several coins, 'but not designed to supersede the local currencies anywhere existing. The reasons assigned for this proposition may be here briefly recapitulated :

1. The desirability of an international coinage has long been universally admitted. The object has been repeatedly sought through diplomatic correspondence and through international conferences called for the purpose.

2. All efforts to this end have hitherto failed, because every scheme heretofore presented has involved the necessary relinquishment, before it could be realized, of all, or at least of all but one, of the monetary systems already in existence. A scheme, for instance, which should save the franc, would necessarily destroy the dollar, the marc, and the pound sterling ; a scheme which should save one of these latter would destroy the franc. A scheme which should be independent of them all, would require them all equally to be abandoned.

The International Monetary Conference of 1867 proposed as a unit base, the French gold piece of five francs. Field's International Code, in the chapter on Money, proposes a metric dollar, containing one and a half grams of fine gold, and one and two third grams of standard gold, nine tenths fine. The gold dollar of the

United States is in excess of this by only six milligrams. The Secretary of State of the United States proposed, in a diplomatic correspondence which took place, in 1870, with the governments of Europe, a basic unit of only a single decigram of unalloyed gold. Dr. Farr, the representative of Great Britain at the Statistical Congress held at the Hague in 1869, proposed a dekagram of standard gold nine tenths fine. Early in 1876, it was proposed in the Senate of the United States, that the President should be authorized and requested to open negotiations with the government of Great Britain, with a view to institute a common monetary system for the two countries on the basis of what may be called a sterling dollar, having exactly one fifth the value of the British sovereign ; this unit to be centesimally divided and to supersede the pound as a money of account. Compared with the dollar of the United States, the value of this proposed unit would be less by about two and three quarters per cent. The scheme was at first urged with some ardor, and found advocates both in and out of Congress ; but it was coldly received in financial circles, and in the end was silently dropped without being pressed to a vote. All these propositions and others less feasible have failed, because, with one exception, they proposed to do away with existing national coinages. The exception is the proposition of the American Secretary of State, which did not propose to destroy but to modify existing coinages, so as to make the several coins the multiples of the basic unit proposed—a modification which the minuteness of the proposed unit made not impracticable. But this very quality of minuteness, on which the success of the scheme depended, was fatal to it ; since, though the relations which it establishes between the different coins are arithmetically finite, they are far from being simple.

3. There is now no longer any reason to hope that any scheme of international coinage will succeed, which does not leave the existing national coinages just where they are. But there is equally no reason why an international coinage should not be superadded to the national, and there are good reasons why it is desirable that this should be done. Such an international coinage would furnish a money of account, in which all the transactions of international commerce could be stated. It would furnish the medium through which international balances could be adjusted without prejudice to the character as coin of the money transported.

The proposed metric-weight gold coin would also be in not inconvenient relations to the principal gold coins now actually in circulation. The gram weight of gold nine tenths fine, would be exactly equal in value to three francs and ten centimes, and almost exactly equal to half a crown British, less half a penny; to two and a half marcs German, plus one pfennig; and to six dimes of the United States, less two mills. The gram would be too small for coinage. The principal international gold coins should be of ten grams, twenty-five grams, and fifty grams. Bearing no denominational stamp except that of weight, they would easily receive local designations in the interior of the countries within which they might circulate, corresponding to those of the various monetary systems, with which they might be associated.

Now, in addition to the international gold coins thus provided, I would propose that there should be also struck international silver coins of similar fineness, and of the weight of twenty-five grams, bearing, like the gold coins, no other denomination but that of their weight, and every where legal tender *for their value as related to gold according to the current price of silver in the bul-*

lion market. While, therefore, maintaining gold as the single sole standard of reference, I would restore to silver its full character as a legal tender for its value throughout the world, and would open the mints to its entirely unrestricted coinage. If, as is believed by Mr. Goschen, Mr. Say, Mr. Cernuschi and others, the extraordinary fall in the price of this metal has been owing to its demonetization, the expedient I have suggested would arrest its further depreciation and possibly restore in a measure the value it has lost. At any rate, it would contribute to give steadiness to the relation between the two precious metals, and so to remove one serious source of uncertainty in commercial transactions between gold-standard and silver-standard countries, such as now exists between Great Britain and her Indian Empire. It would also very soon be experimentally discovered what is the natural relation of value between these metals ; a thing which under the disturbing influences of discordant and constantly varying legislation, has never hitherto been permitted to appear. Moreover, this relation once found, if uninterfered with, would become comparatively stable ; for it can only change with changes of supply and demand, of which the effects must be extremely slow. For, large as the annual supply is actually at present, and larger yet as it is possibly likely to be in the future, it is trivial compared with the vast ocean of accumulated gold and silver in the world, which has grown to its present immensity in consequence of the imperishable nature of these substances. Moreover, the annual supply of these two metals is very nearly equal, so that the accessions of each year can have little effect upon the relative value of the two.

It is difficult to see wherein the plan here proposed would fail to meet every end professedly sought by the

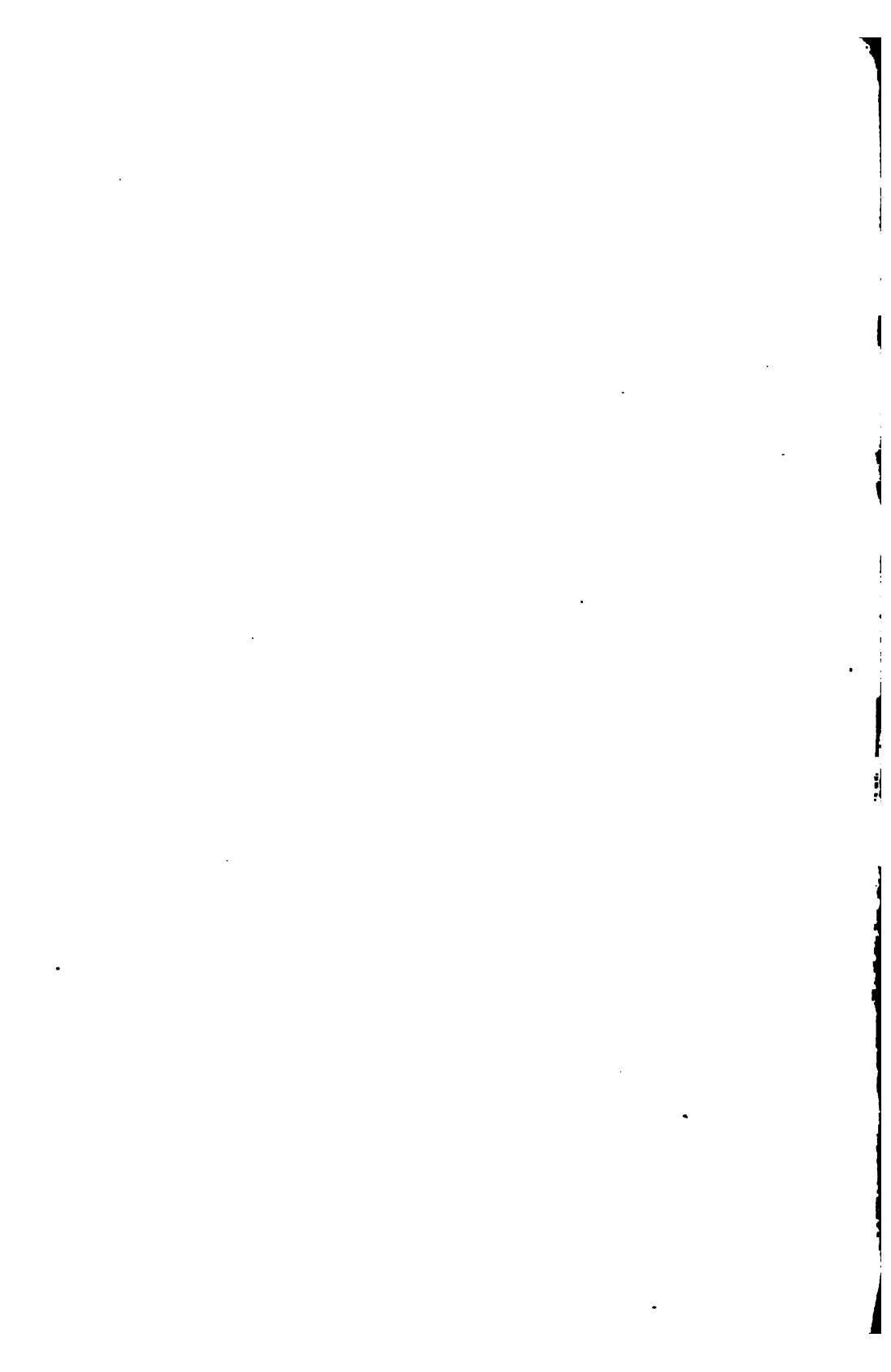
advocates of the unlimited coinage of legal-tender silver. If there are ends sought which are not professed, it may of course fail to accomplish some of these. The remark, however, is here in place, that this is the only plan by which a general remonetization of silver can be accomplished at all. Mr. Cernuschi's scheme of an universal remonetization on a ration of 15.5 : 1, has not a ghost of a chance. And if it had, it is astonishing that he should adhere to so inconvenient a ratio as 15.5 : 1, when, if statute law has the omnipotence he ascribes to it, the much more convenient ratio of 15 : 1, or 10 : 1, or for that matter, 1 : 1, might just as easily be established.

But Mr. Cernuschi's plan has not a chance. Mr. Goschen pronounces it visionary. England looks on it with the sublimest disdain. Germany having sold her silver at a discount, is not going to repurchase it at a premium. In the actual state of things, the Latin Union dare not coin silver, nor throw into circulation the silver they have already coined. Mr. Cernuschi himself earnestly admonishes the United States not to incur the danger of venturing alone upon the hazardous experiment of free silver coinage.

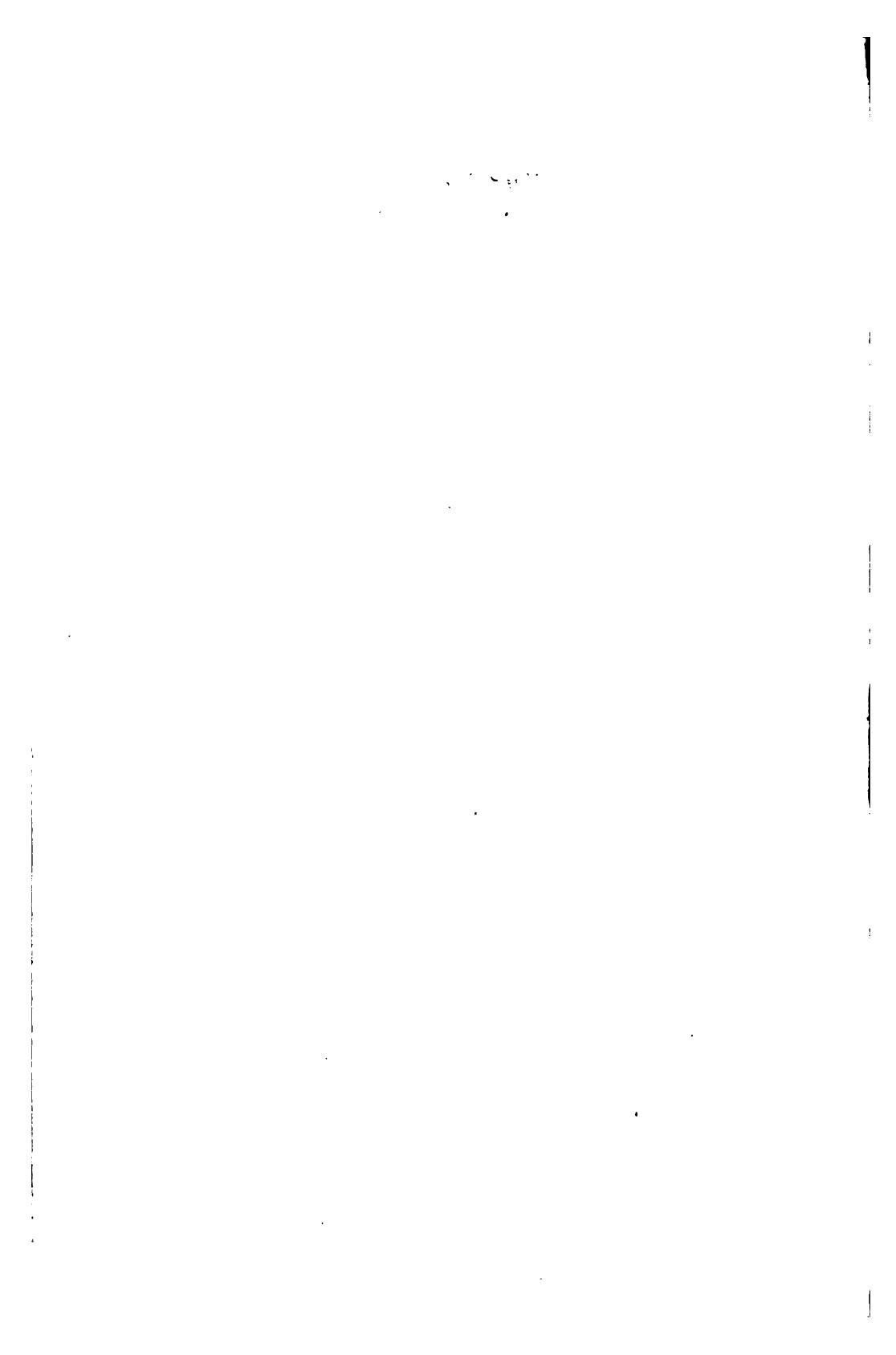
The result is likely to be that the gold-standard nations of Europe will continue to hold their position ; the double standard nations will become practically, as they have become in fact already, gold standard ; India and China will remain silver standard nations ; and the United States will ultimately cast their lot with the Orientals.

The plan here proposed furnishes a solution much more to be desired. England cannot object to it, since it leaves her standard of value undisturbed. The economists of Mr. Cernuschi's school ought not to object to it, since it restores silver to its perfect functions, as a legal-tender medium of exchange. The United States ought to

receive it with favor, because it will silence an agitation ruinous to the confidence which is the life of commercial prosperity, and remove for them a peril which otherwise can hardly fail at length to culminate in overwhelming disaster.



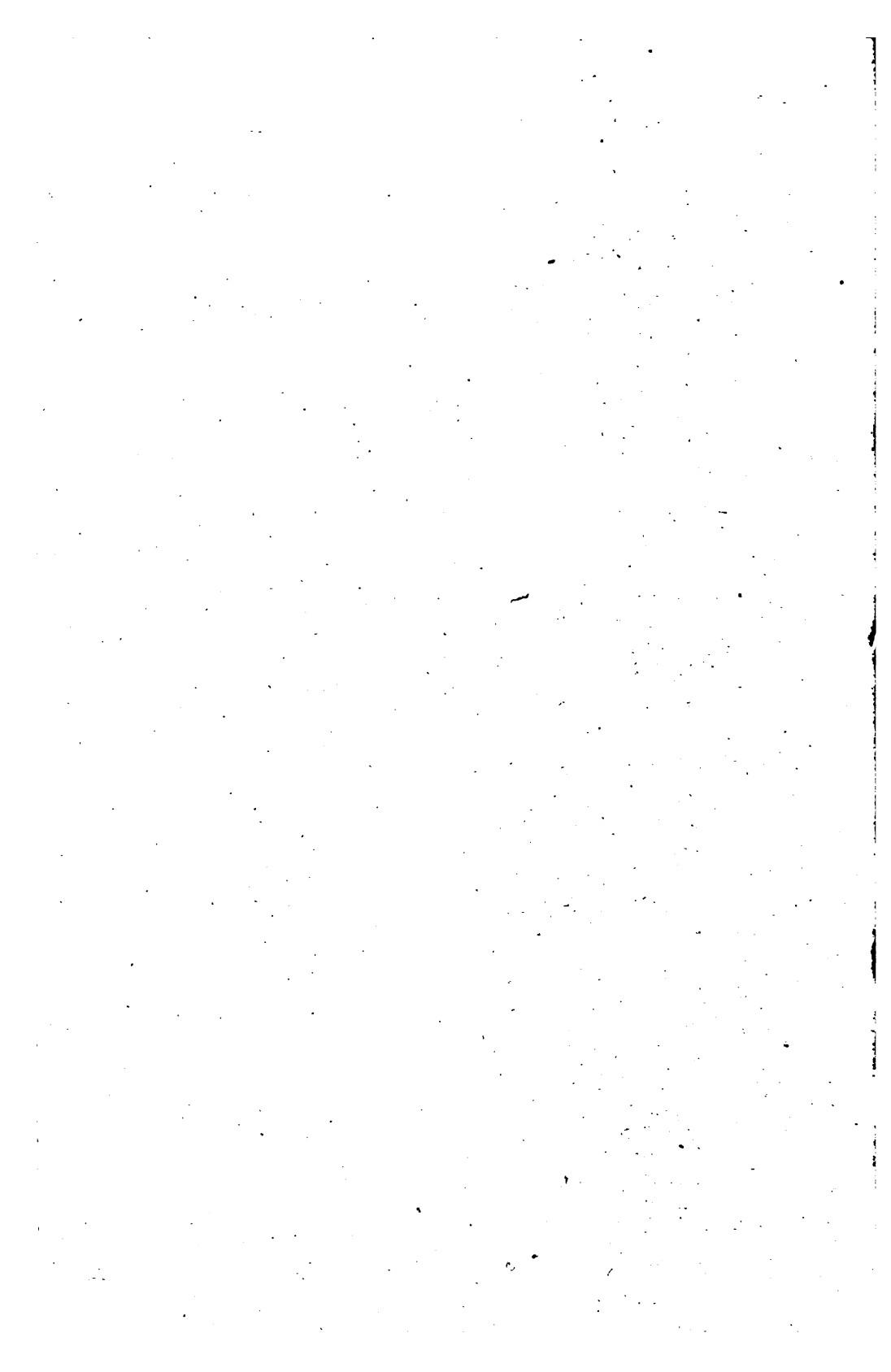




University of the State of New York. —

FIRST COMMENCEMENT,

Albany, July 10, 1879.



(V.)

University of the State of New York.

FIRST COMMENCEMENT.

ASSEMBLY CHAMBER, NEW CAPITOL, JULY 10, 1879

At 12 o'clock, M.

ORDER OF EXERCISES.

PRAYER — REV. DR. FAIRBAIRN, WARDEN OF ST. STEPHEN'S COLLEGE.

INTRODUCTION BY THE CHANCELLOR.

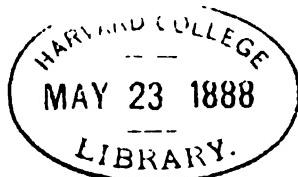
COMMENCEMENT ADDRESS:

"Education and the State. The obligation of the State to provide for the education of its citizens — the extent of the obligation and the grounds on which it rests."

BY FREDERICK A. P. BARNARD, D. D., LL. D., L. H. D.,
PRESIDENT OF COLUMBIA COLLEGE.

DEGREES CONFERRED.

BENEDICTION — REV. DR. REGENT WARREN.



Harvard College.

CHANCELLOR BENEDICT'S INTRODUCTION.

LADIES AND GENTLEMEN:

To-day is an epoch in the healthy and conservative growth of the University of the State of New York, during its corporate life of nearly one hundred years. Created as soon as the alarms of the Revolutionary war had passed away, it has never ceased to be felt in the educational growth of the State, and its influence has increased in a geometrical ratio.

Before this time, however, signalized as it is by the occupation of this new capitol, it has not seemed to the Regents that the fulness of time had come for the establishment of this characteristic anniversary — a public commencement. The separate institutions, in which the work of actual instruction and educational culture is carried on, have always had their commencements which constitute literary festivals of inestimable value, in every quarter of the State. Not till now have the time and the occasion come, for a commencement of the University.

This we now inaugurate, and I introduce to you the Rev. Dr. Barnard, the distinguished president of Columbia College, the oldest college in the State, as the orator of this our first commencement.

COMMENCEMENT ADDRESS.

EDUCATION AND THE STATE. The obligation of the State to provide for the education of its citizens—the extent of the obligation and the grounds on which it rests.

By **FREDERICK A. P. BARNARD**, D. D., LL. D., L. H. D.,
PRESIDENT OF COLUMBIA COLLEGE.

MR. CHANCELLOR:

It was on the 25th day of November, 1783, that the British troops under Sir Guy Carleton withdrew from the city of New York. Thus ended the last act in the tragedy of blood and fire, which for seven anxious years had filled the country with gloom. On the same day the Commander-in-Chief of the armies of the United States, accompanied by his Excellency, George Clinton, Governor of the State of New York, made his entrance into the city. Salvoes of artillery, fired from the Battery, welcomed his arrival, and saluted the star-spangled banner as it went up on the flag-staff of Fort George.

The heavily afflicted city breathed once more freely.

Almost in the very beginning of the struggle this unhappy town had fallen into the possession of the enemy, and during the long period of hostile occupation which followed, it had suffered far more than the ordinary miseries attendant on military rule. Even in the hour of its downfall, and while the shame and grief of its humiliation were still fresh, there fell upon it a new and frightful disaster, which to the pain of subjugation superadded the menace of an immediate and more material distress.

It was the 20th of September, 1776, a date memorably dismal in the annals of New York. The hour was midnight. A corps of occupation, detached from the main body of the invading army, had just reached their camping ground on the northern limit of the city, and were still engaged in pitching their tents, when a vast cloud of smoke arose upon the southern horizon. Tongues of fire were presently seen shooting up in the neighborhood of Whitehall Landing, and, directly after, an immense sheet of flame spread rapidly from river to river, and sweeping along the great central thoroughfare through the heart of the district in which the wealth, the refinement, and whatever of architectural beauty

the city might have to boast, were concentrated, reduced, in a few brief hours, the whole region extending from the Bowling Green on the south to the streets above St. Paul's on the north, to a waste of black and smoking ruins. Of the better class of citizens, a fourth part were left houseless in one night, and of their accumulated wealth a large proportion had vanished in smoke and flame.

Through all the sad years that followed, no hand was lifted to repair the desolation, or to remove its disheartening evidences from sight. Neither motive nor encouragement existed to stimulate the attempt. With the military occupation all the arts of peace had been paralyzed, all commerce, foreign and domestic, extinguished, and the spirit of enterprise was thoroughly broken. Gradually, on the other hand there crept into this desolate scene new features, lending to what was at first merely mournful, an aspect of repulsiveness. Houseless wretches, many of them Tory refugees from the country, the rest made up of the more destitute or profligate of the local population and the army, built for themselves among these ruins hovels for shelter, using, as far as possible, the still standing walls for the purpose, and completing and roofing in the comfortless and unsightly structures, with canvas stretched on spars from the shipping.

But, miserable as was the aspect of this doomed and blasted quarter, the plight of that portion of the town which the conflagration had spared was not much better; so that when at last the exiled patriots, who had seven years previously fled in haste at the approach of Howe, returned to their long deserted and now dilapidated dwellings, the melancholy spectacle which met their eyes filled them with a sadness which even the remembrance of their newly established liberties could not dispel.

With the restoration of the legitimate authority of the State came the return of hope; but it was only by slow and almost imperceptible degrees that the stricken town recovered the visible semblance of its earlier prosperity. And when about two months later, the Legislature of the State of New York assembled for the first time in its principal city, it was under the influence of circumstances of the most depressing character that it entered on its labors. By what means most speedily to lift up the prostrate prosperity of the country, was the question which swallowed up every other in the anxious thoughts of the members. For not the city only, but the entire commonwealth, had sunk down in a common ruin. The exigencies of the war had drained its resources to exhaustion. All industries were stagnant. Agriculture alone maintained a feeble vitality. The public credit was at the lowest ebb, and private credit had ceased to exist. A worthless legal tender medium of exchanges gave to every ordinary

business transaction the character of a game of chance, and arrested completely the operations of general commerce.

Such was the state of things when the first message of the Governor after the peace was laid before the assembled Legislature. This message shows the profound conviction of the Chief Magistrate that, of all the calamities which war had brought with it, there were none greater than the ignorance which the dispersion of the colleges and the closing of the schools had entailed upon the rising generation. Among the matters of pressing urgency which, in the low state of the public fortunes, seemed to call for early consideration, none in his mind could take precedence of this; and therefore, after reverently acknowledging the favor of an overruling Providence by which the seal had been put to the national independence, and indicating the principal matters of public concern requiring immediate legislative action, he continued in the following memorable words :

“ Neglect of the education of youth is among the evils consequent on war. Perhaps there is scarce any thing more worthy of your attention than the revival and encouragement of seminaries of learning; and nothing by which we can more satisfactorily express our gratitude to the Supreme Being for his past favors ; since piety and virtue are generally the offspring of an enlightened understanding.”

This wise recommendation of the Governor received the prompt approval of both Houses. A bill was speedily introduced, and on the first day of May following was passed into a law, providing, among other things, “*for erecting an University within this State.*” In this act are delineated the features of an organization the most comprehensive in its plan of all the educational instrumentalities yet created on this continent. Under it has grown up, during the century which has since elapsed, the splendid system of superior and secondary education of which we have so much reason to be proud ; and which places New York in many respects so far in advance of her sister States.

The original act was found in some respects imperfect ; but chiefly in the respect that it was complicated by the attempt to combine the principle of general supervision with the special administration of the affairs of particular institutions. Its imperfections were remedied by substituting for it, three years later, a more perfect law, carefully prepared by the accomplished scholar and far-seeing statesman, Alexander Hamilton. Under this more perfect law was constituted the university of to-day—the organization which, nearly at the close of a century of signal and uninterrupted usefulness, has gathered its friends together to unite with it on this occasion in inaugurating a new era in its history.

The interest of the occasion is heightened by the incidental circumstance that we meet for the first time in this magnificent edifice, erected

to be the seat of legislative and executive authority for the great State of New York. The splendor of the structure is in harmony with the grandeur of the Commonwealth. As we survey its massive proportions, or study the detail of its exquisite decorations, we cannot but feel gratified at the evidence they furnish that our lawgivers have ceased to be wholly controlled by the spirit of a narrow utilitarianism ; that the craving for the beautiful is at length recognized by them as a laudable, salutary, elevating, and refining sentiment ; and that, for the cultivation and improvement of the popular taste, that kind of teaching by object lessons which it is in the power of a legislature to employ, is perhaps no less effectual, than that for which the same legislature provides for other purposes in the public schools.

Further, since beauty is an inspiration, and since the contemplation of its visible forms tends to purify the thought, soften the manners, and ameliorate the moral tone, may we not hope that these exquisite creations of art which we see around us may react upon the members themselves of the august body who here assemble, and give us more dignity in their proceedings, more kindness in their discussions, more single-mindedness in their aims, more sincerity in their arguments, and more wisdom in their laws.

Upon ourselves, too, may we not hope that the same influences will produce effects equally salutary ? In that unpretending old building which still stands on the brow of the hill below us, we have met for many years to interchange sympathies, to compare opinions, to speak to each other words of cheer, and by union of action to endeavor to promote the advancement of the cause in which we are unitedly enlisted. The grimy floors, the time-stained and crumbling walls, the discolored ceilings, and the plain unpretending upholstery of the chamber in which our annual reunions were held, little as there was about them to kindle enthusiasm or excite the imagination, did not, to our consciousness, sensibly dampen our zeal, or check the genial flow of soul among us. In fact, in the deep interest concentrated upon the objects which brought us together, we gave no heed to our surroundings. As we came not to indulge the pleasures of fancy but to gather the treasures of thought, so having found what we wanted, we went away feeling that it was good for us that we had been there.

But now that we meet in this Aladdin-like palace, where it is impossible not to give heed to our surroundings, shall not we too find something in these outward circumstances to quicken our sensibility to the beauty of moral truth, even as we perceive our taste to be improved in the discernment of the physical ? Shall there not be gradually infused into the communications here presented an æsthetic element the presence of which has hitherto been less perceptible, or at least perceptible less universally ? And will there not be, in attending these re-

unions, an added pleasure, the nature of which, though it may be difficult to distinguish and define, may nevertheless with reason be referred to this cause? At any rate, I am sure that it will not detract from the interest of these meetings, or from the literary merit of the performances that accompany them, whether as it regards profundity of thought or grace and polish of style, that they are held where the presence of beauty will always be exerting its silently ameliorating influence alike upon the spirit and upon the intelligence.

I have, I fear, extended too far these remarks, intended purely as introductory.

Honored by the Regents of the University with an invitation to deliver an address appropriate to the occasion of their first annual commencement, it has seemed to me that I could best discharge this duty by devoting the hour allotted to me to the discussion of a topic partly suggested by a consideration of the functions which they themselves fulfill in our educational system, and partly by the discordant views of educational questions which I have encountered from time to time in the public journals.

This topic is the relation of the State to education—the obligation of the State to provide for the education of its citizens—the extent of the obligation—and the ground on which it rests.

The question, What is the duty of the State towards education? has never been distinctly settled to the universal satisfaction. It has been debated very generally upon grounds more sentimental than logical, especially by those whose views of the subject are most liberal. With such, the elevating influence of education, the dignity of the human intellect and the necessity of culture to its development, the abject condition of a community where ignorance prevails, and the vice which usually follows in the train of ignorance, are fruitful themes of plausible argument. Such considerations show very conclusively that education is a good thing, but they prove nothing clearly as to the duty of the government in regard to it. Health, piety, temperance are good things, but it does not follow that the government should establish agencies to make men pious, healthy or temperate. Moreover, the elevating influence of education is not strikingly perceptible, except where the process has been carried far; so that the weight of this argument applies mainly to that higher education which can be the privilege only of the few.

As to the importance of education, however, whether to the welfare of the State or the well-being of the individual, opinions are not at all divided. That provision ought to be somehow made for the education of the young, is matter of common agreement. But to what extent the State should charge itself with this important interest should devise the systems and establish the institutions of education,

should exact and enforce the attendance of the individuals who are to be educated, and should defray the cost attending these operations, is a question in regard to which intelligent persons widely differ. It is not even universally agreed that the State should concern itself with the matter at all. There are radicals who hold that education is a purely individual interest, with which the State has nothing to do, and with which it should not meddle. There are extremists opposed to these, who maintain that education is a universal interest with which the State has every thing to do, for which it should generously provide through all the grades even to the highest, and should throw freely open to all comers without charge. Neither of these parties is numerous relatively to the population; but the one last named is locally very strong, and its views are practically illustrated in the permanent maintenance of the only absolutely free college in the world, which is also the most largely attended institution of its name in the State of New York. The common opinion lies somewhere between the extremes here indicated; if it is proper to say that there is any common opinion where there is no agreement as to the point up to which the obligation of the State extends, or as to the limit beyond which it cannot be pressed.

This great diversity of views indicates the absence of any general recognition of the fact that there are settled principles to which the question at issue may be referred, and by which the extent of the obligation of the government to maintain education may be ascertained. The discussions which take place upon the subject scarcely in the least involve these ultimate principles, but are almost exclusively concerned with the immediate effects of education as making the individual a better man, and therefore by inference a better citizen. In this form the argument is necessarily inconclusive, because it proves too much. It proves as well that we should have free national universities and free state colleges, as that we should have free common schools. Because the prosperity of a community is dependent on the general intelligence of its members, because educated men become naturally the leaders of society, because the exclusion of the poor from the higher education handicaps them unfairly in the race of life, because the largest education freely offered is the only means by which the genius lurking in the humbler ranks of society can surely be detected and developed and made serviceable—these are all apparently potent reasons why opportunities for the highest culture should be freely open to all.

But these arguments are just as applicable to special, technical, or professional education, as to that which is called general or liberal, and perhaps even more so. When we say that the prosperity of a people is dependent on its general intelligence, we mean that it is indirectly or remotely so dependent. But between the same prosperity

and the condition of the mechanic arts among the same people, the connection is immediate and direct. And if, in regard to general culture, it is an unjust discrimination to deny to the indigent the opportunities enjoyed by their more fortunate fellow citizens, why not equally so to close against them the avenues to the scientific and learned professions? Every argument in this category which can be urged in favor of opening literary colleges at the public expense free to all comers, can be advanced with equal propriety in favor of similarly opening free schools of agriculture and the mechanic arts, free schools of engineering, metallurgy, chemical analysis, and other branches of technology, and finally free schools of law, medicine, and why not even theology?

In reference to agriculture and the mechanic arts, the arguments have been so used, if not as yet pushed to their logical limit; for Congress has been called upon to contribute largely to the endowment of such schools in every state, and has liberally responded to the call. It does not follow that because Congress has done this, its action has been wise. As to that I say nothing; but merely remark in passing that the considerations which induced this legislation were not probably those large and liberal ones I have above suggested—considerations which should logically lead to the endowment just as freely of schools for lawyers and engineers as of schools for mechanics and farmers—but the fact that there are, as politicians are quite well aware, a great many mechanics and a great many farmers in the country, and not by any means as many engineers or lawyers.

If the government has a duty in the case, this duty should rest on logical grounds which admit of being distinctly stated.

The objects for which governments are constituted are few and simple. They are :

1. To provide for the common defense.
2. To protect the citizen in his rights of person and property.
3. To furnish him security in the peaceful prosecution of his chosen pursuit.
4. To institute tribunals for the administration of justice.
5. To treat with other governments, and to adjust questions which may arise with such, amicably or by force.

Strictly speaking, only such operations or measures of government are legitimate, which are promotive, more or less directly, of the objects here enumerated. But as governments are supreme, and as rulers are usually inclined to take a liberal view of the extent of their powers, it happens that many governmental acts occur which would not bear the application of this severe test. Our Constitution, which authorizes Congress to raise money by taxation, authorizes also the expenditure of the same, in the first place, for objects specifically

defined ; and secondly, for such others undefined as may be deemed promotive of the general welfare. This clause, which has been very freely interpreted, can be properly construed only in reference to that rule unwritten in the constitution, and which is a law of reason antecedent to and above the constitution, which limits representative government to measures properly promotive of the objects for which governments are instituted. To understand "the general welfare" in any other sense, is to open the door to possibilities of the most dangerous character. It would doubtless be promotive of the general welfare, if every man could be provided with constant and remunerative employment; or, failing that, with a pension sufficient to maintain him in comfort; but it is not the business of the State to see after this, because such provisions have nothing to do with the objects for which governments properly exist. There are some among our countrymen, and many in other countries, who believe that it would be promotive of the general welfare, if all great business enterprises requiring large capital and the union of resources should be undertaken by the State, and all corporations rigidly prohibited. Others believe this doctrine to be a great mistake ; but it is really a matter of no consequence whether that is true or not, since it does not fall within the legitimate province of the government to do any such thing. In some parts of our country popular opinion leans strongly to the belief that the general welfare would be prodigiously promoted by an unlimited issue of irredeemable legal tender notes, and a disuse of all money in the form of coin. We need not discuss the reasonableness of this belief in order to arrive at the conclusion, on the other hand, that the government ought not to do the thing demanded ; because such an act would self-evidently be in conflict with that duty of the government which requires it to protect the rights of property, and to maintain, or at least do nothing to impair, the steadiness of values which would be greatly menaced by such a proceeding.

In order, therefore, to demonstrate the duty of the State to provide for the education of the people, it is not enough to allege that such provision must necessarily be promotive of the general welfare. It is necessary to show, further, that such provision conduces in some important degree to the accomplishment of the proper objects of government.

Now, in order to the most satisfactory accomplishment of these objects, it will not be questioned that the largest knowledge and the highest mental cultivation are to be desired, and ought if possible to be secured, in the men who stand immediately at the head of affairs. But that it is equally essential to good government that the people generally should possess similar intelligence and cultivation, is not immediately obvious. In States whose rulers belong to, or are derived from, a particular and limited class, the immediate ends of good gov-

ernment may be sufficiently subserved by the education of this particular class. But even in such a State, it does not follow that the education of the people is likely to be without its use to the government, or matter of indifference to it. For it is to the interest of autocrats, even, that the people should be content, and therefore that industry should thrive, and therefore that the industrial class should be intelligent. History is full of monitions to this effect, from the secessions of the plebeians at Rome down to the communistic commotions of the present day. As education is promotive of the peace of society, therefore it is to be expected that it will find favor with autocratic governments, through the mere instinct of self-preservation.

But despotic governments find an additional reason for promoting the education of the people, in the opportunity it affords for guiding and controlling the sentiments, as well as of cultivating the intelligence. As the impressions made upon the mind in early life are the most enduring, so the duty of obedience to the monarch and of reverence for his representatives may be most effectually inculcated among the lessons of the schools. And as governmental supervision may also take care that no disturbing questions of public policy shall find a place in the system of instruction, so it is possible, by a skillfully constructed educational scheme, to provide more efficacious safeguards for the stability of political institutions than can be found in any system of police. Such an educational system affords a capital example of the practical wisdom of the policy which prevents the occurrence of evils, over that which would restrain or cure them after they have occurred.

To a certain extent, under a representative government, similar reasons exist why the State should charge itself with the education of the young. If there is danger to the peace of society, arising from the pressure of want among the industrial classes, this danger is just as great under one form of government as under another. And though a system in which the ruler is the elect of the people does not make reverence for the person of the chief magistrate a duty to be inculcated, it does require reverence for his office, and for the law of which he is the visible embodiment, with no less positiveness; and in the absence of this sentiment, its stability is no less precarious.

Under a democratic form of government, however, additional reasons present themselves why the citizen should be educated. Under such a government, every great measure of State policy must be settled at last by the voice of the people; and it will be settled wisely or unwisely according to the degree of the popular intelligence. Such, at any rate, would be the case if the settlement of public questions by the popular vote could always be regarded as an expression of the popular judgment, and not merely, as to our misfortune it often is, of

the popular will. The distinction is important; for in many instances there is reason to think it is not so much the merit of a proposed measure that governs what we are accustomed to call the vote of the enlightened freeman, as it is the party flag on which the measure is inscribed, or the bearing it may have upon his section or his neighborhood.

Many of these questions, indeed, are of a nature too intricate to be correctly judged on their merits by the average voter. According to the abstract theory of republican government, they are not to be so judged; nor is it presumed that they will ever be referred to the direct arbitrament of the popular vote. This theory assumes that the representative is not only to act but to think for his constituency. It recognizes as an axiom the proposition that statecraft is a science, in which no man can be an expert except by dint of much study, of thorough knowledge of the experience of the past, and large observation of the conditions and needs of the present. According to this view, therefore, questions of State policy should be decided by statesmen, precisely as questions of law are decided by judges.

It is accordingly, in this theory, a necessary assumption that the representative will be a statesman, or will be as near an approach to that character as the community he represents affords. He will be one of the few whose minds have been enriched by the knowledge, and whose faculties have been disciplined by the training, which the highest education furnishes. He will probably be thoroughly versed in history, and familiar with the principles of public economy and of governmental science. He will have been selected by his fellow-citizens because of his possession of these qualifications, and because they desire to profit by a wisdom which they feel to be superior to their own. Finally, he will be maintained with some permanence in his prominent position, because the reasons which originally placed him there will be reinforced by the consideration that his power of usefulness is increased by every year of added experience. In a representative republic theoretically perfect, therefore, the business of the State will be as certainly confined to a limited number of men fitted by training and by experience for the proper discharge of their duties, as under an aristocratic or a monarchical government; the difference only being that, in the republic, the rulers and lawgivers hold their important trust from the free choice of their fellow-citizens, and not by inheritance or asserted divine right.

But the ideal representative republic is an idea only—a mere Utopian dream. It never has had an existence in fact; and so long as human nature continues to be what it is, it never can exist. Our own Federal Constitution presents us the skeleton outline of such a scheme, of which it was intended perhaps to embody the reality. But so far is it from being true that our representatives are selected for their breadth of culture, largeness of information, or repute for sound

judgment or elevated principle — these characteristics often prejudice rather than promote the prospects of a candidate for political success. And so far is it from being true that the representative is expected to be guided by his personal convictions, or permitted to exercise his own best judgment in the votes he may give upon public questions — his course is prescribed to him in advance by a dictatorial power which he cannot resist, or resists only at the price of his position and with the certain penalty before him of ignominious degradation. So far therefore as the ultimate decision of questions in our legislative councils by majority of voices or by show of hands is concerned, it matters not whether our representatives are able or weak, well-informed or ill-informed, wise or foolish, eloquent or dull ; the practical result is the same, because it has been foreshadowed from the moment the counting of the ballot-boxes has shown who were the men who were to cast the votes.

The representatives, nevertheless, are not usually of the weak or the foolish or the dull, nor always (though they are too often) of the ill-informed. It is not altogether matter of indifference to the constituency what manner of man shall speak for them in the councils of the State. They prefer a strong man because they mean to profit by his strength ; they respect intellect, but intellectual independence not at all. What they want in a representative, in short, is an advocate and not a judge.

The reason of this is not far to seek. Little as the debates in our legislative halls may have to do with the final disposition of the measures to which they relate, and of which, in ninety-nine cases out of the hundred, the fate is as perfectly well known before the debate begins as after it is over, yet these debates have very much to do with the probable constitution of the same legislative body after another election. The floods of oratory, therefore, which periodically deluge the august Houses of State and Federal legislation, are not designed or intended to impress or convince those upon whom they are directly poured out ; but they have their motive in the hope that, by their refreshing irrigation, diffused over the broad surface of the country, they may nourish into vigor a growth of popular opinion favorable to the political organization to which the orator belongs. Thus the real business in which our legislative bodies are mainly engaged when they seem to be legislating, is the management of a coming political campaign ; and the noise and confusion, apparently signifying nothing, that occupy so much of their time, have really an important significance, since they are the mingled sound of the trumpets and of the shouting of the captains, stirring up the scattered legions to gather for the fray.

Our actual government, therefore, though republican in form, is in

its substance a democracy; differing only from a pure democracy in the fact that the voice of the people is expressed not directly but ministerially—that is, by the intervention of authorized agents. It is probably only owing to the vast magnitude of the body politic, and the wide extent of territory over which it is scattered, that the ministerial form is not abandoned, and every question of public policy submitted at once to popular arbitrament, and decided summarily by the popular vote. This would be in strict conformity with the spirit which has ruled the political world in our country ever since the century began; and which has found its expression and produced its practical results in such measures as the removal of all the limitations which once existed in all the original States to the universality of the suffrage, the curtailment of the appointing power, and the substitution of popular election for executive discretion in the choice of all public officers, including judges of the highest grade. Perhaps no more striking example of the operation of this spirit can be found than is furnished by the complete frustration in practice of the seemingly ingenious scheme of the constitution designed to remove the choice of a president of the United States to the farthest possible distance from the people, and to intrust it to the untrammelled judgment of independent electors chosen for their pre-eminent fitness to exercise this high responsibility. So careful were the framers of the constitution to guard against the possibility of bias in the minds of these electors, that they inserted into the constitution a provision disqualifying from the exercise of such a function all members of the national legislature, and every person holding an office of trust or profit under the government, no matter how insignificant. Practically we know that the electors appointed under this scheme are shorn of all independence, and debarred from the exercise of any discretion whatever in the casting of their ballots. The ticket they are to vote is prescribed to them even before their own election; and their action is so purely mechanical that it might just as well be discharged by a convention of ingeniously contrived automata. The careful safeguards against bias have no longer any significance; for no matter what the personal bias of the individual elector may be, it cannot in the slightest degree influence his official acts. Yet we see the solemn farce still maintained of a reverence for forms from which the substance has gone out; and the whole country is agitated, and the peace of the union imperilled, in a controversy over the question whether some particular elector, at the time of his nomination, had not held the important and lucrative office of village postmaster or deputy marshal to a federal court.

If therefore statecraft has not ceased to exist in the United States—if we have still among us a class of men whose profounder knowledge and larger wisdom fit them better for the business of legislation and

the duties of administration than the majority of their fellow-citizens — it is safe to say that such science and such men do not control the course of our public affairs. Our public policy bears the stamp of the average wisdom of the people, as it is the expression of their will.

Now there are very few of the questions which arise in the political arena which are not environed with difficulties. There are few of which a plain man of limited information and moderate capacity would be likely to arrive independently at the most judicious solution. There are few which are not more or less embarrassing to the best educated men, and on which there are not important differences of opinion even among those who have studied them most profoundly. But the differences of experts are differences for which they can assign reasons, and in regard to which, by discussion, they may possibly arrive at agreement; while the differences of common or ignorant minds are haphazard differences, determined sometimes by prejudice, sometimes by blind subservience to party, sometimes by self-conceit and the pride of opinion; for it is particularly noticeable that men are confident of their own judgments in political affairs just in proportion as their knowledge is less and as their means of judging are more imperfect.

Look at a few of these questions which are continually in agitation in one form or another before the public, and are in one form or another continually the subjects of demands for new legislation. We find among them, for example, *money and the currency, taxation, free trade and protection, the public credit, the limits of State and national sovereignty, internal improvements, subsidies, monopolies, labor and capital, race prejudice, the navigation laws, free elections, honest elections*, and many more. Examine any one of these—taxation, for instance. See how, under this general question, subordinate questions immediately arise: How may taxation be most equitably distributed? Should personal property be taxed? If so, what is personal property? How shall corporations be taxed? If on their visible property, how about the certificates of stock which represent this visible property? Shall mortgaged property be taxed? If so, shall the mortgage be taxed also? Shall incomes be taxed? No proposition carries with it a stronger *prima facie* semblance of equity. But how shall incomes be ascertained? And is the same rule to be applied to a stipend which dies with the individual, and to interest on loans or rents of real estate, which are practically perpetual annuities? Also, if real estate under lease is directly taxed as property, should the rent of real estate be a second time taxed as income?

The question of taxation involves the more complicated question of customs-duties. This with all governments is a favorite form of taxation, because the burden which it imposes is unconsciously borne. The subordinate questions which it presents are endless. Considered

merely as a system of taxation, without regard to its influence on other interests, the aim of course should be so to adjust the tariff as to raise the largest revenue with the least cost for collection, and in the manner least oppressive to the people. Will this end be accomplished by a uniform rate of duty upon all imported commodities? Experience says not. What principle then should govern in the discriminations admitted? Should a heavier impost fall upon the luxuries than upon the necessities of life? Will not the object be secured just as effectually and much more simply by confining taxation to a few articles of large but necessary consumption, leaving all others free? Granting this, should articles capable of being so richly productive of revenue as tea and coffee be excluded from the list because they are in so general use, and in order, to use the language of the philanthropic demagogue, to secure to the workingman the blessing of "a free breakfast table"? If for this reason tea and coffee are exempt, shall the same reason avail for sugar and salt, which seem to be as necessary to the free breakfast table as tea and coffee?

Here we strike the rock.

We cannot touch the subject of taxation upon importations without bringing up another and a larger and a still more vexed one—the expediency of excluding the products of foreign industry from free competition in our markets with those of our own country. It is pleasant to talk about a free breakfast table when the tea of China or Japan is in question, or the coffee of Java or Rio; but when we speak of the sugar of Havana or the salt of the Bahamas, the freedom of the breakfast table suddenly loses its interest in Louisiana and New York.

What has been said on the subject of taxation is designed only as an illustration of the difficulty presented by the questions of State policy which are constantly in agitation before the people, and which, under our system of government, must be ultimately decided, wisely or unwisely, by the majority of voices. Is it not of the highest importance that they should not be decided wholly by chance or caprice, or by the influence of delusions artfully imposed upon ignorance by designing demagogues? Is it not desirable that the people shall be so educated that they may, at least to some extent, understand these things, and cast their votes under the dictates of a sober judgment and not of a blind impulse? Moreover, if these questions are difficult—confessedly so difficult that even the men of largest knowledge are not at one in regard to them—is there any degree of education which it is practicable for the State to enforce upon its citizens, in providing for which it would not be directly promoting the objects for which governments are constituted? All human wisdom is indeed imperfect, and if it were possible that an entire people should be subjected

to the highest degreee of education which it is in fact the privilege only of the favored few to enjoy, it does not follow that their legislation might not be sometimes mistaken. Grant this, yet, in the circumstances supposed, such mistakes would be comparatively rare, and minds trained to connect effects with causes would soon detect them and apply the necessary remedies. But a chief benefit of such supposed large and general culture would be its power to prevent the suggestion, or at least the mischievous propagation, of wild and visionary, not to say dangerous and disorganizing, political schemes and theories, such as are continually disturbing the peace of our country and menacing the security of its institutions—schemes and theories against which we have constantly to wage an uphill fight, chiefly against ignorance, but also against the malignant passions that ignorance engenders. An universal culture of this high character is of course in the nature of things impossible. But when in this world, as is generally the case, the *summum bonum* in any direction is beyond our reach, we are not justified in neglecting to do what we can to approach it. An imperfect education is better than no education at all. Partial information is better than total ignorance. And any degree of culture prepares the mind to receive with greater profit the further instruction which may come with experience and observation, or through the teachings of the press, or through the continual discussions of public questions which are always going on before the people between men who have made them a study.

What the State therefore should do for education should be limited only by the possibilities which the nature of the problem presents. The question should not be how little it need do, but how much it can do. It need do nothing at all, if we want nothing more than that there should be a government; it should omit nothing that it is practicable to do, if we desire also that there may be a good government.

We come then to the question, How much can the State do for education, and how can it best do it?

Before replying, let us first observe that a great deal of the knowledge possessed by men in adult life, no matter how limited or how extended may have been their education in youth, is self-acquired knowledge. Furthermore, much of their power of acquisition—that is, of the facility with which they apply their powers to the discovery of truth—comes from the discipline of experience, and not from that of the schools. It is strictly true, therefore, that all men are more or less self-educated; and that it is after all more from the education they owe to themselves, than from that which they derive from schools that the degree to which they are able to make themselves felt in their generation is due. More than that—even of the education they receive from schools, much the greater part is their own work. The schools

furnish them the opportunities for doing this work, and the teachers are their guides in doing it; but that their own agency in the result is after all the essential thing, is manifest from the fact that these influences operate very differently upon different individuals, profiting some very greatly, and others hardly at all.

But to self-education, whether in or out of schools, certain elementary instrumentalities are necessary. These are written and printed letters and other characters significant of ideas. The ability to read opens to the seeker after knowledge the accumulated stores of all the centuries; and assuming him to have time and disposition, and in the outset some judicious guidance in the choice of books, there is no limit to the extent to which he may push his acquisitions. But the danger is, and the probability is, that the immature learner, pursuing thus a course of independent study, will read superficially, immethodically, and without frequently and carefully recalling and restating in his own mind the facts of knowledge he has acquired. His knowledge is thus liable to become a confused knowledge, or a half knowledge, incapable, for want of precision, of useful application; and the reflex effect of his mental labor upon the faculties it calls into exercise will not be likely to promote their vigor, or increase his power to concentrate and control them. It is partly to prevent these consequences, but chiefly to insure that the young, after learning to read, shall read at all—or at any rate shall read the books which they ought to read—that schools are provided, and that schools are necessary. The function of the teacher is to direct the reading, to enforce its thoroughness, and to ascertain the resultant effects which it leaves in the mind of the learner; correcting these where necessary, or putting the pupil in the way to correct them himself. For I hold that, in training, the business of the preceptor is not so much to teach (in the ordinary sense) as to make the child learn. I mean by this that when the facts of knowledge which the child is expected to acquire are capable of deduction from facts he knows already, he should be led to reach them through this process of deduction, and not be furnished with them ready made, as isolated facts of information. Nor should the teacher unnecessarily unfold to him the successive steps of this deduction. If the pupil's powers of analysis and synthesis, of comparison and logical arrangement, are ever to be independently useful, he must begin to use them independently in the earliest stages of his education. Hence I am by no means disposed invariably to concur in the eulogies I hear bestowed upon popular teachers because of their practice of making every knotty point in their lessons clear to their pupils by copious explanation. I would much rather hear of their success in making their pupils find their way out of their perplexities for themselves. That a good teacher will

possess in a high degree the power of clear exposition may be taken for granted ; but that he should use this power in order to relieve the learner of the wholesome task of self-instruction, is a very different and is a very unadvisable thing. In virtue of this power, the good teacher will be aware through what process of thought his pupil must pass in order to reach the conclusion desired ; and his skill as an educator will be shown in so presenting the materials as to turn the thought in the right direction.

In speaking thus, I am of course intending my observations to apply to that early stage of the educational process, where the objective facts of knowledge acquired are of less value to the learner than the subjective results which attend the process of acquisition. At the later stage, at which the purpose is rather to inform than to discipline the mind, that teacher is undoubtedly the best who is capable of conveying the largest amount of information in the most succinct form, and who therefore possesses in the highest degree the power of clear exposition.

To return—since without the knowledge of letters and numbers the process of self-education cannot go on, it will be questioned by no one who allows the State to have any duty in the case, that every citizen should be taught to read and write at the public expense. Here, in the view of many, the duty of the State is ended. But this sort of instruction is not education ; it is providing only the implements of education. The objector admits this fact, but claims, on the other hand, that when the State puts the individual in condition to educate himself, he must be himself responsible for the failure if he is not educated. More fully stated the contention is as follows: It is impossible to compress into the compass of a few brief months or years (which is all that, in the case of the average citizen, can be given to education) such an amount of useful information as may qualify an individual to understand the various complicated questions which arise in political life. If, therefore, such knowledge is to be acquired at all, it must be acquired through the processes of self-education ; and when the State has furnished the citizen with the instrumentalities necessary for this, she has done all that can reasonably be demanded. His failure to make the acquisition, should he fail, may be a misfortune, but this misfortune is not the fault of the State.

Others, looking at the subject in a slightly different light, reach the same conclusion by a different process of reasoning. The State, they say, imposes on its citizens certain duties, and subjects them to certain restraints, all of which are expressed in its written laws. Though these laws are printed and widely published, their publication is of no avail to those who cannot read. It is unjust to subject men to penalties for disobedience to laws which they know nothing about, and

which they have no means of knowing. Therefore the State should see to it that every citizen is able to read and write; and then, if any one neglects to know what the law is, and infringes its provisions through ignorance, his ignorance is criminal, and if he suffers in consequence, his suffering is just.

This argument is defective. If, as the argument admits, it is morally wrong to make men suffer for violations of laws which they have no means of knowing, it does not correct the wrong merely to provide the means of knowing, so long as they are sure to continue in ignorance that there are any such laws, or that it is their duty to know them. In the case of the man who cannot read, ignorance of the law is attributable to a material obstacle; in that of one who can read, but without any purposed neglect does not — because, for instance, he never heard of the laws, doesn't know where to find them, is unaware that they concern him, or for any other twenty similar reasons — like ignorance may be attributed to a moral obstacle cutting him off just as effectually. If then the State has a responsibility in the first case, why not in the second? The argument is therefore defective in assuming that by teaching men to read, the State discharges herself of an obligation, when the fact is that by doing so she only changes the form of the obligation. It is consequently an argument which, if it proves any thing, proves that the State should do a great deal more than the thing proposed — should in fact teach laws rather than letters — and which, by the same rule, demonstrates that to teach letters will be no longer obligatory, when the laws are taught without them.

But, once more, the argument rests on a fallacy. It assumes that the citizen who fails to acquaint himself with the letter of the written law is always in danger of incurring through ignorance some serious penalty. If this is true, who of us is safe? Who is there in this assembly who can truly say that he has read the written laws of his country? If you, gentlemen, Regents of the University of the State of New York, presidents and professors of colleges, principals and instructors of our higher seminaries of learning — if you, gentlemen, cannot claim familiarity with the two or three hundred volumes of statutes at large which have gone forth from the high place where we are assembled to-day; if you are not much better acquainted with the digests of these statutes which have been from time to time promulgated; if you are not fully possessed of the contents of the new code with which the Legislature and the bar and the chief executive of the State have been struggling for the past two years; and if most of you are probably not quite clear even as to those particular points of difference in regard to this compend which have formed the *gravamen* of the controversy — how can it be supposed that the humble citizen,

whose education begins and ends with the knowledge of printed characters, and with the ability to read with difficulty, will know these things any better than you? And if he is in peril through ignorance how happens it that we are not so equally?

The fact is that none of us are in any such danger. The general laws to which serious penalties are attached are laws concerning acts which we do not need to be told are wrong. They are the *mala in se* concerning whose character conscience is a better authority than any written code. Conscience may not indeed distinguish, as the statute does, between their degrees of turpitude, or inform us what depth of disgrace, or how many years of penal servitude each may draw after it; but conscience will tell us what is much better than that, that we must not do any of them at all.

This argument therefore for limiting the education provided for the people by the State to the inculcation of the merest rudiments of knowledge, is wholly fallacious. If there were no reason but this why the State should concern itself with popular education, there would be no reason at all.

But it is argued again that the ability to read and write contributes materially to the intelligent transaction of business, and that this is true in every walk of life; therefore that the State should exact and enforce education to this extent, because to this extent it is equally profitable to every citizen, and the liberality of the government is justified by the impartiality of the distribution. It has however been already pointed out that the argument which infers the duty of the State from the benefit of education to individuals cannot be maintained. To care for the interests of individuals as such is no part of the business of the government. Men get along through life who cannot read. They could doubtless get along better if they could read; but why on this account should the State help them?

The proper form of this argument, however, is not to present it as a question of individual interest, but of individual efficiency as a factor in the strength of the commonwealth. In this sense, the increase of individual efficiency is a public benefit. The joint resultant of the increased efficiency of all is to lift a people higher in the scale of civilization, to stimulate among them the progress of the arts, to diversify and perfect their industries, to increase their power of production, and thus to secure for them larger material resources at home, and to command for them greater respect abroad. Whatever thus contributes to the general prosperity of a people, contributes to its security against aggression, and strengthens the hands of its government in the discharge of its essential functions, especially of that which consists in providing for the common defense.

But if upon this ground we can argue in favor of elementary edu-

cation, the same reasoning will justify us in going much further. If merely to possess the rudiments of knowledge, or if only to have command of the implements by which knowledge is acquired, is so to increase the efficiency of individual industry as sensibly, where such knowledge is general, to advance the general prosperity, there can be no doubt that every larger acquisition similarly diffused must be attended with analogous results to a more marked degree. The ability to read is undoubtedly a valuable accomplishment; but to read with profit one should have some such antecedent knowledge as to enable him to read understandingly. What ideas, for example, are likely to be gathered from the columns of a daily journal by one who is ignorant of the geographical divisions of the earth; of the varieties of climate and production of different regions; of the population, degree of civilization, political importance, and military strength of different nations; of the forms of government, peculiarities of religion, and social institutions prevailing in other lands; of the state of the arts, manufactures and commercial relations, and the nature of the ruling industries among different peoples; or to what extent is such reading likely to profit one to whom Rome is a town in the interior of the State of New York, and Waterloo a station on the New York Central Railway; or to whom, finally, the names of Shakespeare and Milton, Napoleon and Wellington, and Gladstone and Disraeli, and even perhaps Washington and Franklin and Jefferson and Jackson, are so many unmeaning sounds? If individual effectiveness depends on individual intelligence, if the products of industry are better and more abundant in proportion as the judgment which guides its operations is more and more enlightened by cultivation, then it is plain that no limit ought to be placed to the extent to which the State should provide for the education of every citizen, but that which the nature of the problem itself imposes. By this I mean to say that we are not to discriminate between studies as in their own nature suitable or unsuitable to be taught in our schools. No kind of useful knowledge is unsuitable, if we have room for it. In fact, if the potentiality of benefit to the body politic is to be our only criterion in judging of the extent proper to be given to our teaching, leaving out of view possible differences of intrinsic value between different descriptions of knowledge, then, whether by the term benefit we understand a moral or a material benefit, there can be no doubt that the advantage relinquished for every subject of study rejected is greater than that secured by any one of those retained. This is true, because the benefits of mental culture increase in geometrical ratio, while the instrumentalities of such culture are increased only arithmetically; so that, as I have said before, if it were possible that a whole people could, one and all, receive the same high mental training which in the actual state of things falls to the lot of only the

few, the advantage to the State would be beyond computation. We are not, then, to draw a line among the various possible subjects of study, and say that these are fit and proper by reason of any thing in their own nature to be taught in our public schools, and these are not. If there is to be a selection (and inexorable conditions, such as limitation of the time at command, may require this), we may properly indicate an order of choice, because some subjects are more directly practical than others, and some are auxiliary to all others; but when finally our line is drawn, we must say — these on this side we include, because we can make room for them; the rest we exclude because unfortunately we cannot.

If I am asked where such a line should be drawn, I reply that that is a practical question, which could not be answered here without going into a detail inappropriate to this place. I may suggest, however, one or two governing principles which must be borne in mind in drawing it. First, the comprehensiveness of the course of instruction must bear some due proportion to the time it is to occupy. That time should be as great as possible, but experience has perhaps settled what is possible in the case. The law should fix a minimum time, and up to that minimum should make attendance compulsory, specifying for this purpose the limiting ages. Secondly, it must be borne in mind that, while many things may be taught if circumstances allow, some things must be taught. Practical utility must here take precedence even of intrinsic value. Reading, spelling, writing and arithmetic will of course lead all the rest. After these will follow geography, physical, political and statistical; then the outlines of history, particularly the history of our own country. To these I would add a succinct summary of the principles of civil government in its various forms, but chiefly those of our own Constitution, with the duties of the citizen under it; but, above all, the supreme duty, in every vote he gives, of voting for principles and not men. The beneficial effect of the inculcation of this idea in the morning of life, and before the blood has become heated in the excitements of political conflicts, would be incalculable. There, if I were compelled to believe that nothing else could be admitted unless to the prejudice of these, I should say we must stop. But I believe there is room for much more; and in this belief I would propose to give the child some systematic knowledge of the objects by which he is surrounded in the natural world — of the elements, in short, of natural history; of the structure of his own body, and the functions of its organs; — that is, of anatomy and physiology; of the properties of matter, and of the laws of force — that is, of physics, mechanics and chemistry. In saying this, I wish not to be misunderstood. I would not, of course, attempt the absurdity of teaching these vast subjects exhaustively. I would confine the

instruction to elementary facts which can be definitely stated; and which, besides being practically useful, might serve as a foundation on which the learner might build, as opportunity should favor, in the future.

In addition to these subjects, room should also, in my view, by all means be made for vocal music, an exercise suited to serve rather as a recreation than as a task, and by periodically relieving the strain upon the mental powers, to quicken their activity while at work. For reasons very similar, I would add the art of drawing; which is further recommended by the fact that there is hardly a walk of life in which the possession of such an accomplishment is not capable of many useful and valuable applications.

I am not, however, proposing a course of common school study. I am only specifying subjects which it seems to be not impracticable to teach in common schools. Of grammar I have said nothing, because I doubt the usefulness of synthetic methods in presenting difficult abstractions to the minds of the young; but instead of this I would teach the English language, by methods of a practical character; such, for instance, as the construction of sentences, the comparison of correct and faulty forms of expression, practice in epistolary writing, and in simple narrative and descriptive composition, and the reading of selections from good authors on topics of familiar knowledge.

But in any system of instruction, primary or superior, it is not enough to prescribe what shall be taught or how much shall be taught — the question *how* these things shall be taught is one of even higher importance. By this I mean that the benefit derived from schools depends perhaps even more upon the teacher than upon the substance of the teaching. It is an unfortunate fact that, in the business of instruction, incompetency may conceal itself and inefficiency escape detection more easily than in most other employments. It requires no extraordinary ability nor any great mental effort on the part of the tutor to assign tasks in text-books, and to go through, with becoming dignity, the process which is called "hearing recitation." Moreover, in these exercises time may be so well filled up as to make it seem that the teacher has really contributed something to the progress of his pupil, although all that he has done has been to listen to a form of words repeated by rote. Now a teacher who is really a teacher must be a positive force in the educational process. He must have that peculiar skill which shows itself in the power to make the pupil think. This with many is a gift of nature, others acquire it by experience, but all find that it is perfected with time.

One important condition, therefore, of the usefulness of the teacher is that he shall be permanent. If I am rightly informed, this remark suggests the weak point in our system of common school

education at this time. The position of teacher in the elementary schools is, I am told, very generally sought by young persons who are conscious of no special aptness for it or predilection towards it ; who have neither desire nor design to become teachers by profession ; who seek this employment, in fact, only as a temporary means of subsistence on which to rely while they are looking round for something better — fitting themselves perhaps for professional life, or waiting to make up their minds ; without motive therefore to improve themselves in an art which they are not likely to practice long enough to make improvement an object ; and with every temptation to lapse into a dull routine and rest contented in a perfunctory discharge of duty. This is a serious evil. It ought to be prevented if possible. There might perhaps be a rule to prohibit the engagement of persons as teachers, who make no secret of their intention not in any proper sense to be teachers. I fear, however, that the evil lies too deep to be reached by any mere rule of administration. I fear that the real difficulty in the case, when looked into, will be found in the inadequacy of the compensation which the teachers in general in our common schools receive. No man of ability can be expected to give up the best years of his life to an occupation by which he barely lives, and which, however long and faithfully he may serve in it, holds out no promise that he shall ever live any better. If we would have permanent teachers we must pay for permanence, just as, if we would have good teachers, we must pay for excellence. In the educational no less than in the commercial world, equivalency of values must be the rule of all exchanges. The fact that in our common schools—I do not say invariably and everywhere, but in many places and often—the teacher is less liberally remunerated (and this not relatively, regard being had to the quality and dignity of the labor, and the time and cost of educating the laborer to his work, but positively in the actual amount of dollars and cents paid over and received) than journeyman carpenters, bricklayers, paviors, and stone masons in the city of New York, is a fact which draws after it its inevitable consequences, inferiority of qualification, lack of zeal, perpetual change.

I think it quite certain that no class of public servants — taken, I mean as a class ; there are no doubt exceptional cases — are so ill-compensated as teachers. No class, on the other hand, render services of higher value to the public ; nor is there any class whose competency, whose efficiency, whose fidelity, and whose devotion to their work more deeply concern the public. If liberal compensation is necessary to secure the services of good and capable men as educators of the children of the people, then such liberality is an infinitely higher benefit to the public than to the individuals who receive the pay. For it is not only a dictate of common sense, but a truth deduced from the

experience of all time, that no investment pays more richly than that which makes its return in the treasures of cultivated intellect. Were I then asked to say in what manner, in my opinion, a people could most strikingly illustrate the economical policy which consists in saving the pence at the expense of the pounds, I should answer — by starving the teachers of their children.

But supposing that the State leaves us nothing to complain of on the score of liberality, what shall be our security that its munificence may not be misapplied—that is to say, assuming the provisions to be quite adequate to command the best talents and the highest attainments, how shall we guard against the danger that inferior men may after all secure the benefit of these provisions? No teacher in any educational institution, from the highest to the lowest, ought to be engaged, unless upon satisfactory testimonials from competent authorities; or, unless, in rare instances, upon the still more satisfactory evidence of established celebrity. For our common schools this point has been carefully guarded by the provisions of our existing laws. Local officers, styled commissioners, elected by the people, are charged with the duty of testing the qualifications of candidates for appointment. The certificate of the commissioner is evidence of the eligibility of the candidate. The system is simple; it ought to be sufficient; but if I am correctly informed, it has one point of weakness. The tenure by which the commissioner holds his office is a source of embarrassment, and makes him liable to a kind of pressure which interferes with his independence. If he is rigorously conscientious, he is liable to be undermined and displaced to make room for some one less scrupulous. The result is that his certificates are sometimes wrung from him in cases where his judgment tells him they are undeserved; and the security intended by the law breaks down. It is true we have a chief of the department, or State superintendent of public instruction, who might, if he pleased, enforce upon his subordinates the exercise of a rigor which, in the absence of such support, they hesitate to employ; but unfortunately the State superintendent is hampered by similar influences, and subject to the same dangers.

What is wanted is that this matter should be placed in the control of some intelligent and permanent body of men, having the independence that permanence in office only can insure; a body serving without emolument, and therefore disinterested; a body well educated and conversant with the business of education, and therefore entirely competent; a body composed of men of high character and distinguished eminence, and therefore possessing something of the dignity and commanding something like the respect which is accorded to judges on the bench. Certainly if, in the administration of justice, it is desirable that there shall be some assurance of permanence, some

security for independence, some immunity from the disturbances of factious agitation, some distance of removal from the arena of popular excitements, some exemption from the hazards that wait on popular caprice, all these things are quite as desirable in the management and direction of a process so momentous in its objects, so complicated in its machinery, so widely extended in its operations, and so universal in the interests it involves, as the education of a people. In the organization of such a directing body, permanence next to respectability is the characteristic which takes precedence in importance of every other; for in educational matters a policy which may not be absolutely the best, if steadily and consistently pursued, is better than one which is always changing, whatever may be the merit of its successive phases. To change a policy from year to year is as bad as to change text-books from year to year; a practice undeniably bad, though each new book may be better than the one discarded; and bad for the reason that we do not after all want to teach books but subjects, and it is quite possible to teach subjects, and teach them well, without any books at all. That the doctrine here affirmed is in accordance with the common sense of mankind, is manifest from the example of the higher institutions of learning; of which all without any exception are placed under the administration of supervisory boards whose members hold their places in permanence, or of which the changes are so gradual as to be practically insensible.

The Board of Regents of this University is precisely such a body as I have had in mind in these remarks. It is a body already in existence; its organic law insures its permanence; it is composed of precisely the right kind of men, thoroughly educated, conversant with educational affairs, personally and justly eminent, and by long experience in the supervision of the superior education of the State familiar with all the practical details of administrative duty. To extend its care to the primary education also would be to introduce unity in place of diversity, and to consolidate the entire educational system of the State into one complete and perfect whole.

Nor in making this change would it be necessary that the present organization of the common school system should be in any essential particular changed. Let the organization stand, but transfer simply to the Regents the authority to appoint the functionaries who now receive office from the Legislature or from local constituencies. Let the Regents prescribe the tests to which aspirant teachers shall be subjected. Let the officers appointed by them apply these tests, as they will then be able to do, fearlessly and independently, and the evils which have been signalized as inseparable from the system in its present form, will at once disappear.

How far the proposition here made may be acceptable to this Board of Regents, I have not inquired, and am unadvised. Should it be thought to increase too largely the burden of their responsibility, there remains the alternative expedient of creating another and parallel body, a State Board of Education, for example, having the same relation to the system of primary education which the Board of Regents sustains to the secondary and superior. To either of these proposals I can see no objection; to the continuance of the present system unmodified I can see many.

I have thus endeavored to present my views as to the duty of the State in regard to popular education, resting them on what seem to me to be rational and logical grounds. Without venturing to anticipate for them universal concurrence, I still think that they will find approval in the educational, if not in the political world.

The subject of the higher education comes next in order. Recurring to what has been said of the importance to the efficiency of schools of well qualified teachers, it is hardly necessary to say that to insure the supply of such teachers is a matter of precisely equal importance; nor to add that such supply cannot be looked for from the elementary schools themselves. If it is true that the art of the teacher consists not so much in imparting information as in stimulating thought and guiding the process of thinking, then it is true that the accomplished teacher must possess a culture much higher than the highest level to which he can hope to lift his pupil. In this consideration we find a suggestion of the necessity, and a justification of the policy, of creating institutions for the express purpose of forming teachers. This is only to adopt in our warfare against ignorance, the most dangerous of foes to the progress or even the maintenance of civilization, the same policy which our national government pursues in training up men competent to direct its operations of offense or defence against its foreign enemies. Our State has not been regardless of its duty in this respect. We have numerous admirable examples of the class of institutions here indicated. The State has also acted wisely in enlisting in the same work the numerous well-appointed and ably conducted academies under the supervision of this Board of Regents, by providing for the formation in these, of classes expressly for the training of teachers. These numerous schools of secondary instruction, which dot at nearly equal intervals the surface of our wide territory, though chiefly the creation of private effort, constitute an element in our educational system of inappreciable value. Besides contributing in the manner just described to maintain the character of the schools below, they afford to many thousands of the youth of our State, prevented by circumstances from resorting to the higher institutions, educational advantages in many cases almost

equal to those of the colleges themselves; and their influence in elevating the standard of general intelligence in the State is far-reaching and powerful. They fill up all the wide interval between the elementary education which is universal, and the so-called liberal education to which hardly one in two or three thousand aspires. In regard to them the State has therefore an important duty to fulfill. It should see that they are sufficiently numerous to be everywhere within reach of the people, should contribute to their support so far as is necessary to guaranty their educational respectability, and should so far control their operations and supervise their methods as to insure their efficient management.

In addition to this, though these schools will necessarily be for the comparatively few, who should therefore pay for the advantages they derive from them, it would seem to me a just and judicious policy for the State to provide that the deserving whom indigence might otherwise debar from their privileges, and who aspire to a higher culture than they can obtain in the elementary schools, should have access to them free of charge—a policy which might easily be extended to the colleges also. The colleges are necessary to complete and crown the edifice of the educational system. They furnish the teachers to the schools of secondary grade, as these last in turn furnish teachers to the primary. If therefore no colleges were spontaneously to arise, it would be incumbent on the State to create them. In general, however, the creation of colleges at the State charge, and for distinctly State purposes, is unnecessary. But one example, so far as my information extends, exists in our country, in which a college established by the State is also maintained by the State as a recognized organ of the government, by annual appropriations in the civil list; and that is the University of South Carolina. In most of the States, however, which have been formed out of territory once belonging to the United States, State universities exist, liberally endowed by the Federal Government, and directly subject to legislative control. Yale college and Harvard university were both created and endowed by the colonial legislatures of the States to which they respectively belong; and till quite recently, in each case, the State retained a representation in the supervisory board.

But however it may have been expedient or necessary in earlier times to create colleges by State authority, as an indispensable part of the educational machinery of the State itself, the present need seems to be rather to restrain than to foster the multiplication of such institutions. We have too many colleges, and not too few. The excessive multiplication of these institutions is not only not a good, but is a very positive evil; because, as the number increases, the average

strength diminishes, with an effect upon the average quality of collegiate instruction as unfortunate as it is unavoidable.

There are some well ascertained and interesting facts bearing on this question which are believed not to be generally known. The common impression probably is that to multiply the number of colleges in the country increases correspondingly the number of college students in the country. But this is a mistake. Statistics prove it to be a total mistake. The aggregate number of students attending all the colleges in the country put together bears a pretty steady ratio to the total population of the country, a ratio which remains practically unaltered, however the number of colleges may vary. Practically unaltered, I say, but I am sorry to be obliged to add that, when distant periods are compared, the proportion of students to population, in spite of the multiplication of colleges in the meantime, appears gradually to diminish.

Taking the country through, the aggregate number of students, candidates for the degree of Bachelor of Arts, in our colleges, is to the total population of the country, nearly in the ratio of one to twenty-five hundred. Less than half a century ago it was not far from one to two thousand. In half a century the population has increased nearly fourfold, the number of colleges threefold, and the aggregate number of the students in arts in all the colleges put together, but little more than twofold. These figures speak for themselves.

Now colleges are costly establishments, endowed chiefly by private munificence ; and liberality in this direction, as in every other, has its limit, which cannot be overdrawn. *Many* colleges, therefore, being interpreted, means *feeble* colleges ; feeble whether as it respects the attendance they can attract, or the material resources they can command.

On the other hand, when the large expenditure has been incurred which is necessary to equip properly a college for one hundred students, this college may just as well receive two hundred ; and but a very moderate addition to the outlay will suffice to fit it for a thousand.

Now the present aggregate population of the country, irrespective of color, is probably not below forty-five millions. At the ratio of one to twenty-five hundred, the whole country furnishes at this moment but eighteen thousand undergraduate students in arts. How many colleges are needed for these ? At two hundred students in a college, ninety. At five hundred, which would be much better, thirty-six — hardly one to a State. But we have actually more than four hundred.

The educational statistics from which these inferences are drawn are the results of a long-continued and laborious inquiry conducted by

myself personally. If a test of their trustworthiness is demanded, it may be found in the returns made to the Regents of the University from the colleges of our own State. It matters not what year we select. One will answer as well as another. I choose the latest published, the returns for the year 1877. In that year the number of male students in arts present in all the colleges of the State—sixteen in number—amounted in the aggregate to eighteen hundred and fifty-five. But assuming the population of the State to be five millions, which does not overstate it, the ratio of one to twenty-five hundred should give her two thousand. The returns, I admit, do not take account of the young men belonging to our State who may be in attendance in the colleges of other States, nor of the probably smaller number from other States who are present in ours; but on the other hand they fail likewise to take account of the very large proportion of the students enrolled as collegiate students in the College of the City of New York who do not proceed nor intend to proceed to degrees in arts, and whose number is much more than sufficient to counterbalance any difference against us in the comparison of inter-State exchanges.

If this test proves any thing, it proves that the ratio of one to twenty-five hundred is too high and not too low. This is only to say that it more than confirms the previously stated deductions drawn from a more general inquiry.

Some advantages are claimed to result from the multiplication of colleges. It is fair to consider these. The first is that, by such multiplication, colleges are brought nearer to those who need them, and are reached with less expenditure of money and of time. This argument might have had weight fifty years ago; it has very little now. If there were but one college in a State, and if every student should attend the college of his own State, hardly one anywhere need be separated from his home by twenty-four hours. If, on the other hand, a college were provided for every two or three hundred students, and if these were equidistantly distributed through the country, the question of time would cease to have any significance. Large as is the present number of our colleges, nine students out of ten, perhaps ninety-nine in a hundred, have to travel to reach them. If we had but one-quarter as many, the average time of travel would hardly be increased an hour.

Another reason of greater weight than the foregoing in favor of the multiplication of colleges is found in the fact that every religious denomination regards it as a duty to provide for the youth of its own persuasion all the machinery of the superior education. This sense of obligation seems to be not in the least diminished by a consideration of the fact that the class-room instruction in all colleges, whether

State or denominational, is strictly secular. The direct religious influences exerted by such colleges result mainly from the observance of peculiar forms in the daily devotional exercises of the academic community, or from the direct inculcation of characteristic doctrines during public worship, as conducted in the college chapel on the Sabbath; that is, from the maintenance at college of the same influences to which the youth is subject at home. There is, however, something more than this, though it is something not so distinctly definable. The mysterious force of sympathy, whereby men, whether young or old, enlisted under a common banner, and associated together in numbers, react upon each other, encourage each other, confirm and strengthen each other in their views, their convictions, their aspirations, their zeal, exerts an influence of incalculable power in intensifying the spirit of religious fellowship. Thus the denominational college benefits the denomination which maintains it, not so much by teachings directed to the understanding, as by more subtle influences appealing to the heart. With some of these, however, are associated proper theological schools, and these are instrumentalities of a more positive character.

Another cause determining the multiplication of colleges, which is without the same justification, is found in the ambition — a very laudable one — of thriving towns to build up within themselves all the appliances of the most advanced civilization. Public spirit, always a praiseworthy sentiment, is sometimes eager to create instrumentalities for good in advance of the necessity; and when once a splendid enterprise has been projected, promising honor, *eclat*, and perhaps more material benefit, to the residents of the locality which its accomplishment is to illustrate, the imaginations of a whole community become excited, and local pride is stimulated to a degree which generally makes the first success comparatively easy. The misfortune is that the enthusiasm which is equal to the effort of initiating an undertaking of this character, seldom suffices to sustain it through the unavoidable difficulties of succeeding years; so that a college which owes its birth to a generous impulse full of promise and cheer, may be destined only to add another to the many already existing examples of misplaced generosity and mistaken endeavor.

Now, in what I have said of the multiplication of colleges I wish not to be misunderstood. I do not object to many colleges because they are many, nor to small colleges because they are small. If they are all equally good, and all really good, it matters not, educationally speaking, how many there are. We cannot have too much of a good thing. But that a college may be a good college, it must be well endowed; for without ample resources it can neither possess the instrumentalities which are indispensable to thorough instruction, nor

command the men most competent to use the instrumentalities. As I have said before, in education, as certainly as in commerce, quality will command its price.

My objection to the multiplication of colleges, therefore, rests upon the economical ground that, since the work these institutions have to do is the same, whether there be many or few, the increase of the number, quality remaining the same, involves to the public a very large and quite unnecessary increase in the cost of doing it. But my objection goes further: with an undue multiplication of collegiate institutions, the human probability is that quality will not remain the same. And if it does not, then the public suffers not only in an economical, but also in an educational sense.

The evil resulting from this cause would not be so serious if all our colleges were not clothed with university powers. The distinction is one so wholly disregarded in this country, that it would seem to be almost unknown. Colleges originally grew up as the organs of universities; first to lodge, afterward to lodge and aid in teaching university students. They had nothing to do with degrees. The early continental colleges have chiefly perished; the British survive. They are learned, wealthy and powerful, but they cannot confer degrees. Some French collegiate schools of more recent erection confer the degree of bachelor—no other.

Now all our colleges are universities. How stands their number to the population? In the east it is bad enough. New York, with her sixteen colleges, has one to three hundred and twenty thousand inhabitants; Massachusetts, with her seven, one to two hundred and thirty thousand; Connecticut, with her three, one to two hundred thousand; and Rhode Island, with a total population of two hundred and sixty thousand, has one only. Further west it is much worse Pennsylvania has twenty-nine colleges, or one to about one hundred and thirty-five thousand inhabitants; Illinois has thirty, or one to one hundred thousand; Tennessee, twenty-seven, or one to ninety-five thousand; Indiana and Missouri, each twenty-three, or one to ninety thousand; Ohio, thirty-seven, or one to eighty thousand; and Iowa, twenty-one, or one to seventy thousand.

The total number of colleges in all the states together is about four hundred and twenty-five, or one to a little more than one hundred thousand. When I say about, I mean as nearly as it is possible to find out. One would suppose, considering the high grade of these institutions—high at least in assumption—that no fact in all statistics ought to be more easily ascertainable than the number of colleges in the United States; yet so far is this from being the case, that the effort to arrive at the exact truth on the subject has baffled the most patient and most persevering industry of every investigator who has

ever attempted it. What with the uprising of new and hopeful enterprises on the one hand, and the down-tumbling of older (not always old) and rickety concerns on the other, the absolute total for any given year is never certain, and for any two succeeding years is never the same. If the estimated number I have given is too large to-day (and I do not think it is), it will probably be too small before another year rolls round.

It is inconceivable that this great multitude of educational institutions, all calling themselves by a common name, can be all of uniform merit, and all equally deserving of the confidence of the public. In fact, if we examine the roll of those who attend upon their teaching, we shall see that they cannot be; for in very many instances the great mass of the students are, in age and in advancement, children, attending what is styled a preparatory course; while a handful, numbering from half a dozen to twenty, are separately classified and grouped under what is pretentiously entitled the *Department of Arts*. These institutions are in fact merely secondary schools, which have been become seized with the ambition to add to their dignity by calling themselves colleges. There are, under the care of this Board of Regents, some three hundred academies, whose work is intrinsically better and of higher grade than that of half the institutions included in the list of American colleges published by the Bureau of Education at Washington.

In one of our largest western States, I am informed that under a general law any seven men who may associate themselves together and raise the pitiful sum of five thousand dollars, are authorized to constitute themselves a Board of Trustees, organize a college, and proceed to confer degrees in arts. The value of a degree conferred by such a body may be easily understood.

Now why should I concern myself, why should you concern yourselves, why should any of us concern ourselves about this eruption of feeble colleges, sham colleges, often mushroom colleges, breaking out in epidemic form all over the surface of the land? Why not allow their founders, if it amuses them, to mimic academic ceremonial, and play at the annual manufacture of laureates, regular and honorary, without comment and without interference? Simply because these laurels, which are thus lavishly scattered abroad, are the insignia, of at least have hitherto been the insignia, guaranty, stamp and attestation of genuine scholarship, awarded by the recognized representatives of the highest learning. To bestow them on so slight an assurance of deserving, to allow them to be bestowed by self constituted authorities of no recognized standing or weight of personal character, is to pervert their intent, debase their value, and utterly destroy their significance. To an American who has been accustomed to see these

distinctions dispensed so lightly, and who is not in the least surprised to find, in every twentieth village he visits, a tribunal, neither august nor awe-inspiring, fully empowered to dispense them, it would be difficult to conceive or appreciate the value which was once attached to an academic degree in the Old World, and which clings to it there even yet. During the mediæval period an academic degree was almost equivalent to an order of nobility, or to a decoration bestowed by a monarch. We may perhaps be able to conceive the honor and deference which the stamp and seal of high erudition carried with it by calling to mind the fact that a very little learning, even the mere ability to read and write, was sufficient to secure to its possessor exemption from the ordinary penalties of the criminal law.

Degrees were not originally instituted as titular distinctions — the purpose which they principally subserve at present — they were certificates of proficiency conveying the right, and imposing the duty, to teach in the institution conferring them. Hence, as the substance was more important than the name, the holder of the certificate was, in the earlier period of the history, invested with no title fixed by law, but was called indifferently a *licentiate*, a *master* (viz., of a school), or a *doctor* — that is to say, a teacher. The term *Arts* is simply the name given to the seven subjects of study taught in the schools of Charlemagne, and presumed in that day to embrace pretty much the whole circle of human knowledge — viz., the *trivium*, consisting of grammar, logic, and rhetoric; and the *quadrivium*, of arithmetic, geometry, astronomy, and music. The origin of the term *bachelor* is uncertain. By some it is supposed to be a corruption of the words *bas chevalier*, the lowest order of knighthood, as distinguished from the knight banneret; by others, it is derived from the ceremonial of institution, in which a staff (*bacilla*) was placed in the hands of the proficient. As the laurel is the traditional emblem of triumph achieved, the recipient of the honor was styled *baccalaureatus*, or bachelor. So far as can be discovered, these names were, for a century or more, used interchangeably; nor is it clearly settled precisely when and how they began to be distinctive of different orders of privilege; but after the middle of the thirteenth century it is certain that the term *bachelor* was used to distinguish the imperfect graduate, whose authority to teach could only be exercised under the direction of a *licentiate* or *master*; while the *licentiate* was invested with authority to teach independently. The distinction was somewhat similar to that which exists in American colleges between professor and tutor. The *master* was simply a *licentiate* of higher dignity but not of higher powers. The *licentiate* could be promoted to the *master's* degree on demand; but the promotion was attended with expense. There being really no substantial difference between these two grades, the universities of the

more recent centuries have generally disused one or the other. In Great Britain the degree of master continues to be conferred, but not that of licentiate ; France retains licentiate, but has dropped the degree of master. The term doctor, originally the synonym of master, was in progress of time confined to the faculties of theology, of canon and civil law, and of medicine. It is chiefly from its later use as an honorary distinction that it has come, in our time, to be reckoned as the highest of the degrees in point of dignity. The doctorate in medicine is an exception to this, for the reason that it has not been so used.

From this account of the origin of degrees it will naturally be inferred that they were not bestowed indiscriminately even upon proficients. They were conferred only on those who desired and designed to teach. Such was not the desire or design of the students generally. They did not go to the university to get degrees. They went to learn. The aggregate number of students in the mediæval universities was prodigious. At Paris, in the thirteenth century, it was no less than thirty thousand ; at Oxford at the same time it was equally great ; at Cambridge, hardly less. These British universities continued, down to the end of the sixteenth century, to maintain an attendance of fully five thousand each. As to the number of graduates, no published statistics are known to me except those given by Huber in his history of the British universities ; but these throw a great deal of light upon the question. He gives the number of bachelors and masters of arts annually made at Cambridge for one hundred and sixty years, beginning at A. D. 1500 ; and the number of bachelors made annually at Oxford for nearly the same period. From these tables I find the average for Cambridge of the first sixty years, when the average attendance was about five thousand, to have been thirty-five bachelors and twenty-two masters made annually.

Since then a university of five thousand students produced only twenty-two masters of arts per annum, we see how it happened that the duty to teach in the same university, which accompanied the right to teach conferred by the degree, admitted of easy fulfillment. The multitude of students demanded a multitude of teachers, and the annual supply was not in excess of the annual demand. But as, in the exercise of this right, the graduate became *ipso facto* a member of the governing body, and was distinguished by the title *Magister Regens*, it was a natural consequence that the decree should become an object of desire, as well for the honor as for the privileges it conveyed ; and hence that the number of graduates should increase. The tables of Huber show that it did so ; the average number of masters annually graduated at Cambridge about the middle of the seventeenth century, having been not far from tenfold greater than the corre-

sponding number for the century before—and this although the aggregate undergraduate attendance had largely diminished. Hence, in time, the supply of teachers began to exceed the demand, and numbers were graciously absolved from their obligation. The masters thus relieved from duty, and also the regent masters when they ceased to teach, were styled *Magistri non Regentes*. Thus it happened that a degree came to be, what it is with us now, simply a title of honor, and an attestation of ascertained proficiency in learning and of superior intellectual culture.

In the earlier universities the power to grant degrees was a concession from the supreme head of the Church. Princes, who desired to found universities, made application for the privilege to the Pope. At a later period secular rulers claimed and exercised this power independently. The power of conferring degrees, however, could not be self-assumed; it could only be exercised as a grant from the highest authorities of the church or State. But neither church nor State were by any means lavish in the concession of this important power. Before the fifteenth century there were but five universities in all Germany, including Austria and Bohemia; two in England; and two or three in France. With the progress of time the number has increased; but even at present there are but twenty-two German universities, in a population of forty-two millions, or about one to two millions; fifteen in France, with a population of thirty-seven millions, or one to two and a half millions; and four in England, with a population of twenty-three millions, or one to five and three-quarters millions. Legally there is but one university in France, of which the fifteen above named are branches, locally styled academies. From an enumeration made in 1860, it appears, that, in all Europe, the number of universities is one hundred and eleven, in an aggregate population of three hundred millions; giving one university to about two and three-quarters millions of inhabitants.

These simple statistical facts, without a superadded word of comment, abundantly explain how it happens that an academic degree possesses a value in the British Islands and on the continent of Europe which it has not in America. The sources of honor are so few, their characters are so high, they embody a learning so profound, their teachers are in general so celebrated and of so universally recognized authority, and finally the tests to which they subject aspirants are so rigorous, that a certificate of proficiency received from them has a meaning that all the world can understand.

All these advantages we have thrown away. We have not only multiplied almost indefinitely these fountains of honor, but we have taken no care that, in their composition, they shall either represent learning or command reverence. A village parson, a village doctor, and a vil-

large lawyer, supported by a banker, a shop-keeper or two, a manufacturer, and perhaps a gentleman farmer, constitute very commonly the tribunal who are to dispense the precious distinctions which the conservative wisdom of other times entrusted only to the honored hands of those whom universal consent pronounced to be the wisest and best. This tribunal, moreover, not merely bestows upon the juvenile aspirant to academic honors the customary certificate of his proficiency; but, passing in review before its critical eye the theologians and the jurists and the statesmen, and the men of letters, and even the professors of the highest learning themselves, strews over the whole surface of the land, with a generosity as profuse as its discriminations are inscrutable, a periodical shower of honorary degrees.

Can we not do something to remedy this miserable business? Taking up the other morning one of our leading daily journals, my eye fell upon an article entitled "The Commencement Season." The editor lamented, as I have been lamenting, the degradation which has befallen the degrees in arts in our country. He ascribed this deplorable fact, as I have ascribed it, to the indefinite multiplication of degree-giving institutions, the absence in many instances of any kind of guaranty in respect either to the thoroughness of their teaching or the learning of their teachers, and the absolute certainty that they are too often sadly deficient in both these particulars; and he concluded with the observation that, if academic degrees are hereafter to command any respect, it can only be secured by writing after the letters which denote the distinction the name of the college conferring it. Even that perhaps cannot save them; for when any significant symbol, badge, or token, especially if it have been originally of a decorative character, becomes an object of public ridicule and contempt, it cannot be restored to the favor it has lost, even though covered with the mantle of the highest respectability.

Can we not, then, do something to remedy this lamentable state of things? There is a remedy—not easy of application, perhaps, because, to be effectual, it requires the concurrence of many independent wills—but a remedy nevertheless if we will adopt it. It is this: Let the State reserve to itself the exclusive right of granting academic degrees. So far as this right is concerned, I would, if it were possible, make *tabula rasa* of the entire existing system; that is to say, without interfering in the least with the scholastic operations of existing colleges, I would withdraw from all of them the degree-giving power, and place them all upon the same footing as the colleges of Oxford and Cambridge. But, inasmuch as that would be an infringement of vested rights, it would be impracticable to do it unless the power were voluntarily relinquished. Leave, then, the existing colleges alone, but allow no more to be created with this power.

Let each State, then, establish for itself a State university, charged with no duty of teaching, but empowered to charter teaching colleges, at its discretion, in all the faculties; to prescribe general rules for their conduct, to exercise supervision over them, to examine all candidates for admission to them, and all proficients who may be presented by them for degrees; and, finally, to confer those degrees by diploma under the seal of the university, setting forth in such diploma the name of the college presenting the candidate. As it respects existing colleges, though they would retain the right to issue diplomas in their own names and under their own seals, I would still extend to them the same system of examinations, relieving them from the task of testing the qualifications of candidates either for admission or for graduation.

The State University, therefore, as I conceive it, would be a body possessing powers considerably resembling those of the University of London; yet not altogether, for though, like that university, it would examine for degrees, it would not examine all comers indiscriminately, but only those presented by the colleges. It would also be competent to exercise a jurisdiction and would be charged with responsibilities which do not belong to that at all.

Were this scheme to be adopted in every State, although it might not, except by voluntary surrender, diminish the number of our degree-conferring institutions, it would nevertheless, for all practical purposes, reduce this number to thirty-eight. Furthermore, as each State University would necessarily be compelled to employ a permanent board of professional examiners, who, from the dignity and responsibility of their office, would naturally be, like those of the University of London, men of profound learning and usually men of celebrity, its diplomas would all carry with them a stamp of authority, which is sadly wanting to many of those now issued. Under this system, the sound colleges would be distinguished by the uniformity with which their candidates would secure approval; the feeble, unsound, or specious would be compelled to strengthen and reform themselves, or would be crowded out of the competition.

Now in this State of New York the actual condition of things in our educational system is such as to make very easy, and almost to invite, the trial of this experiment. We have a State University actually in existence. It possesses in a measure the very powers which the scheme contemplates.

It is competent to charter colleges with faculties of arts and faculties of medicine, but not with faculties of law or faculties of theology. It possesses the right of supervision and of visitation, not only over the colleges created by itself, but over those previously in existence. It has the power to grant, by diploma issued under its seal, all such

academic degrees as are known to or are usually conferred by any incorporated college or university in Europe, except degrees in arts.

The powers of this institution, therefore, need only to be somewhat enlarged, and its duties and responsibilities to be somewhat increased, to enable it to fulfil all the functions proposed in the scheme I have submitted. As to its form, it needs no change.

Could this plan be adopted in this State only, it is hardly too much to hope that the salutary results of the example would, in progress of time, lead to the adoption of the same plan by sister States; so that, at a period not quite hopelessly distant in the future, the chaos that involves the superior education of the country might be reduced to some order; and all its organs and representatives might command and deserve the same degree of public confidence which is now awarded only to the few.

The views I have thus presented are not by any means new with me. I have entertained them many years. When the plan first presented itself to my mind it seemed so feasible that I was sanguine enough to believe, it need only be presented to be accepted. I ventured therefore with deference to lay it, first of all, as seemed to be most fitting, before the zealous friend of education then at the head of the University, the late Chancellor Pruyn.

And here let me pause for a moment to pay, in passing, my feeble but sincere tribute of honor, reverence, and affection to the memory of the distinguished public servant and estimable man whose name I have just spoken.

John Van Schaick Lansing Pruyn was one of those rare and noble specimens of humanity whom Providence sends occasionally into the world to serve as type and model of the good citizen. Endowed by nature with a generous heart, a clear intellect, a sound understanding, a well-balanced judgment, and an instinctively refined taste—natural gifts to which a superior education had superadded all the advantages which a liberal and scholarly culture could bestow—he was admirably fitted to fill any position of trust or responsibility in social or civic life; and there was none to which he was called which he did not adorn.

The representative of this city and district in the councils of the State and of the nation; a leading member of numerous organizations established under State authority or by private associations for the promotion of useful or benevolent objects; an energetic man of business, intimately associated in the direction of financial institutions or business corporations wielding vast capital and involving in the wisdom of their administration the interests of the entire community; learned and able in his chosen profession of the law; an active, earnest, and most influential promoter of education, as well in the

local institutions which received his personal care, as in this Board of Regents, of which he was for thirty-three years a member and for nearly sixteen years its Chancellor and presiding officer, in every capacity he left behind him an honorable record of duty conscientiously fulfilled, and of substantial practical results successfully accomplished.

In his personal character he was all that is admirable: Severe in integrity and unbending in principle, he was also honorable in his impulses, kindly in his disposition, gracious in his manner, affable in his address, interesting and instructive in his conversation — producing thus upon those who met him even only once an impression that was never effaced.

His religious convictions were earnest and sincere ; yet, while he bore constant witness to the faith that was in him by his scrupulous observance of all the ordinances of the church of which he was a member, there was nothing exaggerated in his display of piety. His Christian character was indeed in beautiful harmony with the definition of the apostle: Pure religion and undefiled before God and the Father is this: to visit the fatherless and the widow in their affliction, and to keep himself unspotted from the world.

He has passed away from us forever, but his memory lives. In this convocation over which he for so many years presided, it will be kept forever green. When in succeeding years we come together in our annual reunions at this capital, we shall still seem to catch the bright smile with which he used to greet us, we shall still seem to hear the cordial welcome which used to fall so genially from his lips. And when again we return to our separate fields of labor, his remembrance will accompany us as an animating and inspiring influence ; and if ever in our lessons to the young we would impress their tender mind with a sense of the beauty of virtue or the grandeur of moral rectitude, we shall recount to them the life history and point to the noble example of John V. L. Pruyn, the honest man, the generous friend, the untiring philanthropist, the devout Christian, the faithful public servant, the pure patriot, the accomplished scholar, the energetic man of business—the good citizen.

Eight years have passed — perhaps ten — since I presented my scheme to the late Chancellor, and was so happy as to secure from him an expression of his approbation. He advised me to lay it before other members of the Board of Regents. None seemed to me more likely justly to appreciate its merits than the able and influential member who has since been so worthily called to fill his place, and who then represented in part the city of New York in the Senate of the State. Senator Benedict was also pleased to express his approval of the plan, considered abstractly upon its own merits. But his sagacity detected

an obstacle in the way of its practical success which, I confess, had not occurred to me, or which, at any rate, had not occurred to me as serious ; it was this : If the Regents assume the duty of conducting examinations, they must have permanent and able examiners ; if they have examiners they must pay them ; in order to pay them they must have money ; they cannot find money unless the legislature gives it ; and to ask money for the purpose from the Legislature would be hardly more effectual than to call spirits from the vasty deep. This was a point on which the position of the Senator enabled him to speak from conviction — it was, I am sure, an unwilling conviction, and my courage fell. Till now, since that time, I have never dared to revive the subject ; but the plan has still continued to linger in my mind as the *beau ideal* of an educational system for our State and country which ought to be realized, and which, at some period in the future, I would fain hope may be so still.

And why should it not ? Could the insignificant sum necessary to carry this grand scheme into effect in our State be better appropriated ? Can a State whose material wealth is so vast as to be expressible only in thousands of millions, hesitate over the exercise of a modest liberality which is sure to build up for her a fund of intellectual wealth of a value inestimably greater.

What, moreover, after all, would be the cost ? Ten, twenty, possibly twenty-five thousand dollars annually — a poll-tax, say, of from two to five mills per head upon her five millions of inhabitants. This, too, to maintain a system of education of which the successful result in a single instance may pay her back a hundredfold the expenditure of a century !

But why should we be always asking for a mercenary return ? and for every miserable coin which we release from our reluctant grasp demand a guaranty in advance that it shall come back to us again, identically in kind ? Is the dignity of the State worth nothing ? Is nothing due to the rank she holds among enlightened peoples ? Should not her institutions be in harmony with the advanced civilization of which she justly makes her boast ? I think our people, I think our Legislatnre even, when questions are concerned which involve the character of the State, do not always dole out their bounties with so parsimonious a hand ; and if I did, I could not look around me from the position in which I stand, and mark these sumptuous columns, these glowing frescoes, these gilded mouldings, and these sculptured capitals, and not feel that I had done them injustice. It is impossible, I say to myself, that a legislature and a people can rear a monument of architectural splendor so magnificent as this, and do it in order, by this sign, to typify their greatness, their wealth, their cultivated taste, and their spirit of enlightened liberality ; and can

yet be unconscious how far this gorgeous show falls short, after all, of accomplishing its object in the noblest sense ; or insensible to the ambition to illustrate their truest dignity and greatness by raising side by side with this grand achievement of material art, a monument so far superior to it in grandeur, that it shall endure and go on growing in beauty and splendor long after these polished stones we see around us shall have crumbled into ruin.

But important changes which require the concurrence of many minds, simple though they may be, and desirable as they may appear, are rarely accomplished speedily. The spirit of conservatism yields slowly even to conviction ; and conviction, however intense in the individual, permeates the social mass as gradually as elevation of temperature makes its silent way through a solid which has been heated at a single point.

I look for no sudden success of the scheme I have outlined—hardly for any thing like a general though cautious approval. But if, as I believe, it has a substantial basis of common sense, it will not fail to find silent favor with the thinking few, and through them it will yet recommend itself to others beyond ; till, by the slow process of diffusion, it shall at length leaven the whole lump of popular opinion. After that there will be no further trouble with legislatures, for legislatures are never sparing of money, except when they fear the people.

It is now ninety-two years since the passage of the act " to institute an University within this state," under which the present organization has been since continuously operating. When the full century since it entered upon its beneficent work shall have been completed, the event will presumably be commemorated by some fitting ceremonial. It seems to me that I cannot more appropriately conclude this address, to which you have done me the honor to listen with a courteous attention which I fear I have somewhat abused, than by expressing the fervent hope — almost the belief — that on that interesting occasion, if not earlier, it may be possible to announce that the limitations upon the powers of the University of the State of New York, which, during the first century of its existence have so sensibly restricted its usefulness, have been at length removed ; and that henceforth, under its fostering care and wise supervision, the educational system of the State moulded into a form in which unity of design and uniformity of practice shall pervade it throughout all its complicated ramifications, may be inspired with new life and new vigor, and become, in the succeeding centuries, the index, as it is to be the instrumentality, of an ever-rising mental culture and an ever-advancing civilization.

DEGREES CONFERRED.

Doctor of Laws.

THURLOW WEED, OF NEW YORK CITY.

Doctor of Philosophy.

JOHN EDWIN BRADLEY, OF ALBANY.

STEPHEN GALE TAYLOR, OF BROOKLYN.

Doctor of Medicine.

(*On the nomination of the Homœopathic Medical Society of the State of New York.*)

EDWARD PAYSON FOWLER, OF NEW YORK CITY.

CORNELIUS ORMES, OF JAMESTOWN.

CHARLES SUMNER, OF ROCHESTER.

Barnard, Frederic; Augustus Foster. 14



METROLOGICAL NOTES.

Embracing (1) the Metrology of the Past; (2) The present state of the World's legislation on the Metric System; from Barnard's Metric System.

[Printed in advance of publication, for presentation to the American Association for the Advancement of Science, at their meeting in Saratoga, August, 1879.]

SECTION 5.—THE METROLOGY OF THE PAST.

Nothing is more characteristic of the general progress of civilization throughout the world, than the gradual disappearance of those numerous differences between different peoples which relate to matters purely conventional. There are differing peculiarities of race, which being dependent on physiological or climatic causes, will probably never be obliterated. Differences of complexion, of stature, of mental and moral temperament, will probably always continue to exist. But the manners and customs, the social usages, the instrumentalities of commercial interchange, the laws, the governments, all things in short, which are subject to human control, tend steadily to assimilate themselves to each other, and give constantly increasing ground for the belief, that in most respects the world is yet to become entirely uniform as to its social organization, as to its political institutions, and possibly even as to its language.

The history of the past has shown us a progress in this direction of which we are scarcely conscious, until we begin to enumerate to ourselves the very many particulars in regard to which all civilized nations are already agreed. The late eminent publicist, Dr. Francis Lieber, has called attention to this tendency in a communication addressed, in Aug. 1871, to the editor of the *Revue de Droit International*, in which he quotes from his previously published works in English, the following passage, which (not having been able to find it in its place) we here re-translate. He says, “The modern nations of our group” (meaning the Caucasian) “have arrived at concordance in very many things, and this concordance goes on constantly augmenting. We have the same alphabet, the same numerals, the same system of notation both arithmetical and musical, the same division of the circle and of time, the same maritime league, the same barometer, the same mathematical language, an identical science of music and of the fine arts, a common system of education as well superior as primary, the same abstract science, the same division of governmental powers, the same principles of domestic economy, the same descriptions and fashions of garments, the same manners, the same toys for children (Asia and Africa have no toys, or at least none for children only); we are

connected by a common postal and telegraphic service; we are tending more and more to uniformity of weights and measures, moneys and maritime signals; we have the same ideas in financial matters to such a degree that all the grand *bourses* of commerce have acquired the character of international reunions wielding an influence at least equal to the diplomatic; we have an international law of literary property which is rapidly extending; a law of private property perfectly recognized abroad; in fine, we have a common international law, binding even during war. Add to this that we possess really one literature, which may be justly called international, and in which a Shakspeare, a Kepler, a Franklin, a Humboldt, a Grotius, and a Voltaire appertain equally to the entire cis-Caucasian race. We have a common history of civilization; and Columbus as well as Frederic, Napoleon as well as Washington, appertain to us all for our benefit or our misfortune."

There is thus existing and has for some centuries existed a steady tendency towards uniformity of usages, uniformity of laws, and uniformity of modes of thought, among the entire group of cis-Caucasian or mainly Christian nations, which the progress of enlightenment in our own time has stimulated to a very high degree. Hitherto its operations have been difficult and tardy. "The history of simplification and of unification," says Dr. Lieber, "is an uninterrupted history of difficulties slowly and progressively vanquished, in the laws of succession, in general laws, in customs, in measures, in moneys — in short in everything. In the middle ages the law of succession varied, not only from one town to another, but even from one side to the other of the streets, as the different populations had thus originally established themselves. Rostock was an example of this. Each place had its different measures and its different methods of calculation, and frequently the same place had different descriptions of weights for different descriptions of merchandise." [This state of things, as appears from debates in the British Parliament, still prevails to a large extent in many rural districts of Great Britain, notwithstanding the efforts which have been made by parliamentary enactments since this century began, to enforce uniformity.] "The books of arithmetic in use in the English schools give to this day an appalling number of measures for different objects; but in the meantime

uniformity, gradually gaining ground, has pervaded towns and provinces and larger areas, until finally whole countries have made it their rule, in their laws, in their measures, and in their moneys. This is the point at which we stand at present."

What remains is to make this same uniformity the rule of the whole world. In respect to systems of weight and measure, the progress toward international uniformity is already very signal. On the continent of Europe, from the Atlantic coast to the Russian boundary, if we except the little peninsula of Denmark, but a single system prevails; yet within the area here embraced, there existed, three quarters of a century ago, a state of confusion in this matter little less than chaotic. The character of this chaos can in no way be better illustrated than by presenting, as is done below in tabular form, the immensely numerous varieties of value which have heretofore been attributed to certain particular units of measure everywhere called by the same name.

The first of these tables is devoted to the *foot*. The measure called by this name was first introduced in pre-historic times in ancient Greece. A unit similarly denominated has been practically the basis of every European system of linear measurement since the period of the Roman conquests in Germany, Gaul, and Britain. Even in the country of its origin, however, the length of the foot measure was by no means everywhere the same; and in later times, the different values assigned to it have been almost as numerous as the towns or districts in which it has been employed. The values given in the table below have been gathered from numerous authorities, including Kelly, Tate, Nelkenbrecher, Paucton, Altés, Tarbé, Doursther, and others. The table includes all the foot measures which have been at any time in use, so far as known. By far the greater number belong to Europe; but a few are derived from the East, from South America, and from the southern hemisphere. Two or three in the list are of comparatively recent origin, having been derived from the metric system within the present century. These were adopted in Switzerland and in some of the minor states of Germany, with a view to render the local systems commensurable with the metric. The total number of values embraced in the table amounts to two hundred and eighty-two, of which there were actually in use a century ago no fewer than two

hundred and seventy-six, and of these two hundred and sixty-six belonged to countries which have since adopted the metric system. All this great number must be counted as having become obsolete since the century began, most of them within the past twenty or thirty years. Those which still survive belong to the United States, Great Britain and her dependencies, and to the Russian Empire. Nothing could more strikingly illustrate the power of that tendency towards uniformity among civilized nations of which we have spoken above, than an examination of this list and a consideration of the contrast it presents between the actual state of things in Europe, at this time, and that which existed on that continent previously to the foundation of the first French Empire. It is not pretended that this enumeration is entirely exhaustive; but it embraces all the different values for which authorities have been found. In some instances, in which the same measure is given by different authorities for the same place, there occur slight discrepancies between them. In these cases, both values are entered in the table, because both have been derived from standards actually in use, and it would be impossible to discover which, if either, has the higher claim to authenticity. This is only to say that the differences are real, and therefore that, in a complete exhibit, both values ought to be retained.

We have, however, in the consideration of this fact, a suggestion of one of the causes which have probably been instrumental in producing this enormous diversity. It has been due, doubtless, in great measure to so imperfect a system of governmental control, and such a neglect of the necessary inspection and verification, at frequent intervals, of the public standards, as has naturally left the door open to the introduction of actual differences between measures intended to be, and supposed to be, of the same dimensions. We have an example of this kind in the case of the *Feldmassfuss* of Aix-la-Chapelle, which Doursther gives as 282.0 mm.; and Gattey as 282.1 mm.; also in the ordinary foot of Nivelles, which Kelly gives as 277.0 mm., while Renard and the official tables of the department of Jemappes give it as 277.09 mm. Other similar examples will be detected by glancing along the columns of the table. But such cannot have been the origin of the differences generally observed, although these differences throughout are so

slight as to give to the table the appearance of a scale of prismatic wave-lengths.

The explanation above suggested could only apply to measures slightly differing, in the cases in which they are found in the same place, or at least in the same neighborhood. When, on the other hand, slight differences are observed to occur in towns geographically separated so far from each other as Carrara, in Italy, where the foot is 293.3 mm., and Hainaut, in Belgium, where it is 293.4 mm., we must presume that these measures, and consequently their differences, originated independently of one another. A similar example of this character is found in comparing the foot of Valentia, Spain, which is 302.33 mm., with that of Linz, in Austria, where it is 302.9 mm. Again, the foot of Pernau, Russia, is 274.8 mm., and that of Bruges, Belgium, 274.4 mm.; the foot of Amsterdam, Holland, is 283.1 mm., and that of Dresden, Saxony, 283.26 mm.; the foot of Bar-le-Duc, France, is 294.4 mm., and that of Ancient Rome, 294.3 mm.; the foot of Cracow, Poland, is 356.4 mm., and that of Bordeaux, France, 356.74 mm., etc. In cases like these it is impossible to suppose the measures cited, trivial as the differences are, to have had a common origin.

In contrast with this we often find, in the very same place, two or more foot-measures so largely different that there can be no doubt of their entirely independent origin. These, which are usually, and almost invariably, incommensurable with each other, were severally employed for different purposes. Thus, at Lucerne, besides the foot for ordinary uses of 313.85 mm. (the extensively used *pied du Rhin*), there was a carpenters' foot of 303.86 mm., and a builders' and surveyors' foot of 284.23 mm. At Berne, the foot for ordinary purposes was equal to 293.26 mm., and the *steinbrecherfuss*, or quarry foot, to 317.7 mm. At Audenarde, Belgium, there was the carpenters' foot 292.00 mm., the masons' foot 297.7 mm., and the surveyors' or agrarian foot 285.1 mm. Cassel had two agrarian foot-measures, one of 284.9 mm., and another of 398.9 mm., while the foot for ordinary use was 287.7 mm. These varieties added greatly to the confusion of ideas, when dimensions were stated in feet. But this confusion was still further increased by the fact that the necessities of business

required the people of each locality to employ, more or less, the measures of other localities. Thus, the foot-measures of capital cities and the greater marts of trade, as of Paris, Brussels, Vienna, Hamburg, Frankfort-on-the-Main, Antwerp, Cologne, and others, were very generally known and used throughout Central Europe. The latter, commonly called *the foot of the Rhine*, appears to have been more extensively employed than any other. It was made the legal foot for the Kingdom of Prussia, and prevailed over nearly all the states of Germany and large portions of Switzerland, as well as in Copenhagen (Denmark), Christiania (Norway), and St. Petersburg, Moscow, and Nijni-Novgorod, in Russia.

It will be observed that the larger foot measures are found chiefly in Italy. Beyond the limits of that kingdom no such measures employed for ordinary mechanical purposes exceed fourteen inches, with the exception of those of Cracow, Bordeaux, Franche Comte, Dordrecht, Trent, Tessin, and Geneva; of which the first four are slightly in excess of fourteen, and the last three belong to towns in close connection with Italy. Those which exceed this limit in the more northern countries, as for instance the large foot of Berlin, 14.828 in. = 376.62 mm., and that of Halle 17.046 in. = 432.95 mm., are agrarian measures. The large foot measures of Italy may perhaps be explained by considering the intimate relations which existed during the early centuries between that peninsula and Northern Africa, Egypt, and the Levant, where the unit of length has always been the cubit. The Romans appear to have borrowed the measures of the East, but to have applied to them names with which they were already familiar; so that the cubit became the foot. Still, the city of Rome has retained down to the present century the foot of the Empire very slightly changed; the modern Roman foot being 11.729 in. = 297.9 mm. and the ancient 11.595 in. = 294.5 mm. The foot of Carrara is only 11.548 in. = 293.8 mm.; and in many other Italian towns, especially in the states of the Church, the foot is below fourteen inches, and in some below thirteen.

It need hardly be said that the diversity of measures of surface, of capacity, and of weight, in use in past centuries in the different countries of Europe, and since discarded for the metric measures,

has been no less remarkable than the table below shows it to have been for those of length. Superficial measures in fact, being usually the squares formed upon the length-measures, had of course the same variety as these last. Weight measures and capacity measures, however, being in all the old systems of metrology entirely independent, had of course, their own systems of diversity. In the case of weight, as in the case of length, a common name, the *pound*, was employed to denote the ordinary unit throughout the continent. The name of the ordinary capacity unit, however, varied from country to country; so that, although the same degree of discord existed among capacity measures as among the others, there did not co-exist with it the anomaly of an endless diversity where the nomenclature seemed to furnish a guarantee of identity.

Table II. gives a view of the varieties of pound weight once, or still in use, very many of them long since superseded by the kilogram, but of which some, though a much smaller number, still survive. In this list we see even more strikingly than in the case of length measure, the needless multiplication of differing measures of the same name in the same place. In every place there were at least two different pound weights; in many places there were three, and in some as many as four, five, six, or even seven. Stockholm, in Sweden, for example, had this number, viz.: a pound weight for provisions (*wiktualjewigt*) of 423.54 grams; a customs-pound (*stapelstadswigt*) of 338.8 grams; a mining pound (*bergwerkswigt*) of 374.4 grams; a city pound (*landstadswigt*) of 356.6 grams; a pig-iron pound (*råjernwigt*) of 486.7 grams; a raw copper pound (*råkopparswigt*) of 375.9 grams; and finally a pound for drugs and medicines of 355.0 grams. Frankfort-on-the-Main had six, viz.: a wholesale pound of 505.3 grams; a retail pound of 467.9 grams; a fish-market pound of 511.7 grams; a meat and butter pound of 482.5 grams; a flour and malt pound 481.0 grams, and a medicinal pound of 357.5 grams; this last having been originally the pharmaceutical pound of Nuremberg, adopted later by common consent for all Germany.

Among localities having five different pounds, may be named Alicante and Valentia, in Spain; Dresden and Leipzig, in Saxony; and Hof in Bavaria. Among those having four, Nuremberg in

Bavaria ; Basle in Switzerland ; and Grenoble in France. Among those having three, Augsburg in Bavaria ; Amsterdam in Holland ; Schaffhausen in Switzerland ; Mannheim in Baden ; the Ionian Islands, and many others.

The table also furnishes us abundant examples of the growth of diversities from the carelessness or unskillfulness with which standards have been constructed, or from want of exactness in their verification by the proper authorities. Thus there can be no doubt that the pound of Madrid, the pound of the Asturias, the pound of Cartagena, the pound of Teneriffe (a Spanish Island), and the pound of Cadiz, are all of them varieties of the old legal pound of the Kingdom of Castile. It is impossible nevertheless to ascertain which of these values corresponds to the original value of that old pound ; or whether this is true of any one of them. The pound given as that of Madrid, viz., 7100 grains = 460.07 grams, was determined by a standard *marc* (half pound) of Madrid, sent to London in 1818 by the British Consul General at that capital, and verified at the mint. The Cartagena pound is given in accordance with a determination made by Kelly from a comparison of many standards of which he took the mean. The Cadiz pound is from a value given by Altés as having been verified in 1830 at the prefecture of Marseilles. Finally, the Teneriffe pound, for which the authority is Kelly, was determined from a standard of ten pounds in weight sent to London and verified there. The year of this last determination is omitted. The pound of Corunna, 460.9 grams, came without doubt, from the same source, and possibly that of Gibraltar, 461.5 grams ; but that of Constance, Switzerland, 460.56 ; that of Amiens, France, 461.4 grams ; and that of Lindau, Bavaria, 461.8, were all probably of independent origin.

The total number of differing values for the pound weight contained in this table is three hundred and ninety-one. The total number which have been superseded by the kilogram is three hundred and seventy.

It will, of course, be understood that the several foot-measures and pound-weights given in these tables were used more or less extensively in the villages and towns adjacent to those named in the list. It is not always easy, therefore, to determine to which locality each most distinctively belongs. Thus the pound of Aurich, Han-

over, 496.8 grams, which is in the list, is equally the pound of Leer, seventeen miles distant from it. Also the commercial pound of Liège, Belgium, 467.1 grams, is also the pound of Charleroi in the same kingdom, and of the adjacent town of Maubeuge, in France. Such examples are numerous.

It is further to be noted that in these tables it has been impracticable to notice the special objects for which the several foot-measures or pound-weights were employed; or, in other words, to distinguish them as surveyors' measures, builders' measures, etc., or as commercial weights, jewellers' weights, druggists' weights, market weights, etc. All these are arranged indiscriminately in the order of their values.

TABLE I.—*The FOOT MEASURE at different periods and in different localities.*

Where used.	British Inches.	Milli- meters.	Where used.	British Inches.	Milli- meters.
Delphos, Greece (anc.)	7.276	184.8	Nivelles, Belg.	10.900	277.09
Wezel, Prussia	9.254	235.06	Neustadt, Bav.	10.910	277.1
Altorf, Switz.	9.299	236.2	Alost, Belg.	10.914	277.2
Avignon	9.759	247.87	Terlaphenc, Belg.	10.931	277.66
Aix en Provence	9.784	248.57	Duffel, Belg.	10.945	278.0
Hesse Darmstadt	9.843	250.0	Worms, Darmst.	10.949	278.1
Saragossa, Spain	10.119	257.0	Mannheim, Baden	10.957	278.3
Duren, Prussia	10.358	263.1	Castile	10.958	278.38
Jaghibe, India	10.460	265.08	Heilbronn, Wurt.	10.964	278.5
Reval, Russia	10.471	265.06	Burgos, Spain	10.970	278.64
Utrecht, Neth.	10.563	268.3	Osnabrück, Han.	10.995	279.27
Zug, Switz.	10.580	268.7	Heidelberg, Baden	11.003	279.35
Châlons, sur Marne	10.658	270.7	Mechlin, Belg.	11.004	279.5
Dunkirk, Belg.	10.757	273.2	Bruchsal, Baden	11.010	279.65
Bergues, Fr.	10.774	273.65	Maaestrecht	11.020	279.9
Ypres, Belg.	10.784	273.9	IIIideschim, Han.	11.031	280.2
Riga, Russia	10.791	274.08	Bamberg, Bav.	11.041	280.45
Pernau, Russia	10.800	274.3	Madrid, Spain	11.047	280.6
Bruges, Belg.	10.803	274.4	Muhlbhausen, Prussia	11.057	280.86
Wetzlar, Prussia	10.815	274.7	Rheims, Fr.	11.084	281.53
Ghent, Belg.	10.839	275.8	Aix-la-Chapelle (*)	11.102	282.0
Gozée, Belg.	10.853	275.65	Aix-la-Chapelle	11.107	282.1
Bruselas, Belg.	10.856	275.76	Metz, Germany	11.114	282.3
Termonde, Belg. (?)	10.866	276.0	Lima, Peru	11.122	282.5
Ostend, Belg.	10.870	276.09	Curaçao	11.125	282.57
Nivelles, Belg. (?)	10.906	277.0	Leipzig	11.128	282.66

¹ The foot of Termonde, East Flanders, 276.0 mm, and that of Ostend, West Flanders, 276.09 mm, differ so slightly that they may very probably have had a common origin.

² The authorities generally give the foot of Nivelles as 277.0 mm; Renard, and the official tables of the Department of Jemappes, (now called Department of Hainaut) give it as 277.09 mm.

³ Doursther and the authorities generally give the agrarian foot of Aix-la-Chapelle = 282.0 mm; Gattey makes it = 282.1 mm.

Where used.	British Inches.	Milli- meters.	Where used.	British Inches.	Milli- meters.
Buenos Ayres	11.129	282.67	Bienne, Switz.	11.508	292.3
Fulda, Hesse	11.137	282.88	Calenburg, Hanover	11.510	292.35
Raremonde, Belg.	11.142	283.0	Nordhausen, Prussia	11.524	292.7
Amsterdam	11.146	283.1	Bingen, Hesse	11.504	292.1
Dresden, Saxony	11.150	283.26	Nuremberg, Bav.	11.541	293.15
Magdeburg, Prussia	11.164	283.56	Berne, Switz.	11.546	293.26
Malta	11.167	283.63	Carrara, Italy	11.548	293.3
Breda, Neth.	11.186	284.13	Hainaut, Belgium (4)	11.561	293.4
Lucerne, Switz.	11.191	284.23	Mons, Belgium	11.553	293.43
Frankfort-on-Main	11.205	284.61	Wurtzburg, Bav.	11.564	293.7
Hesse Cassel	11.217	284.9	Treves, Prussia	11.565	293.75
Stettin, Prussia	11.223	285.09	Bar-le-duc, France	11.590	294.4
Audenarde, Belg.	11.225	285.1	Rome (anc.)	11.595	294.5
Brunswick	11.235	285.36	Liège, Belgium	11.603	294.7
Diest, Belg.	11.240	285.6	Namur, Belgium	11.606	294.76
Louvain	11.241	282.51	Alsace	11.614	295.0
Haarlem, Neth.	11.253	285.8	Luxemburg	11.622	295.2
Lorraine, Germany	11.259	285.93	Clèves, Prussia	11.635	295.5
Oppenheim, Darmst.	11.264	286.1	Oldenberg	11.645	295.88
Gera, Reuss.	11.268	286.2	Moravia	11.652	296.96
Hamburg	11.279	286.5	Augsburg, Bav.	11.661	296.2
Antwerp.	11.293	286.8	Prague	11.670	296.4
Dantzig, Prussia	11.295	286.9	Stockholm	11.688	296.87
Aix-la-Chapelle	11.303	287.1	Galicia, Austria	11.691	296.96
Neufchâtel, Switz.	11.305	287.15	Thorn, Prussia	11.706	297.3
Wiesbaden	11.311	287.3	Audenarde, Belg.	11.721	297.7
Greci, Belg.	11.315	287.4	Calais (<i>pied du Comte</i>)	11.723	297.77
Aschaffenburg, Bav.	11.319	287.5	Douay, France	11.725	297.8
Düsseldorf, Prussia	11.323	287.6	Schaffhausen, Switz.	11.728	297.88
Gothe	11.324	287.62	Rome, Italy	11.729	297.9
Bois-le-duc, Neth.	11.326	287.67	Holstein, Germany	11.750	298.45
Cassel	11.327	287.7	Anspach, Bav.	11.803	299.8
Glatz, Prussia	11.333	287.84	Zurich, Switz. (5)	11.812	300.0
Lübeck	11.335	287.9	Zurich, Switz.	11.8656	301.38
Prussian Silesia	11.337	287.96	Fleisslingen, Baden	11.866	301.4
Poland	11.339	288.0	Valentia, Spain	11.903	302.33
Culm, Prussia	11.343	288.1	Linz, Austria	11.9 6	302.9
Aix-la-Chapelle	11.359	288.5	Nuremberg	11.963	303.86
Halle, Prussia	11.364	288.63	Rio de Janeiro	11.966	303.94
Lindau, Bay	11.368	288.75	Eichstadt, Bay	11.970	304.04
Mannheim, Baden	11.370	288.8	Nuremberg, Bav.	11.973	304.1
Spires, Bay.	11.374	288.9	Basle	11.990	304.54
Ulm, Wurtemburg	11.377	288.97	England and U. S.	12.000	304.79
Bremen	11.386	290.2	Durchheim, Bav.	12.012	305.1
Montbelliard, France	11.390	289.3	Larr, Baden	12.025	305.4
Austrian Silesia	11.395	289.42	Oppenheim, Darmst.	11.032	305.6
Linne Detmold	11.398	289.5	Benfelden, France	12.034	305.67
Duderstadt, Hanover	11.413	289.9	Scotland (ancient)	12.065	306.44
Zenlenrode, Reuss	11.417	291.0	Montebello, Italy	12.094	307.2
Mannheim, Baden	11.426	290.2	St. Gall, Switz.	12.108	307.54
Coblentz	11.442	290.6	Königsburg, Prussia	12.114	307.7
Münster, Prussia	11.448	290.8	Athens (anc.)	12.126	308.0
Carlsruhe, Baden	11.457	291.0	Trèves, Prussia	12.203	309.96
Friedburg, Darmst.	11.477	291.5	Zierickzee, Neth.	12.221	310.4
Liège, Belgium	11.488	291.8	Rotterdam	12.301	311.48
Munich, Bavaria	11.491	291.86	Ratisbon, Bav.	12.345	313.56
Celle, Hanover	11.496	292.0	Cologne (<i>pied du Rhin</i>)	12.357	313.85
Alzey, Darmstadt	11.500	292.1	Besancon, France	12.391	314.74
Groningen, Neth.	11.504	292.2	Austria	12.445	316.1

⁴ The foot of the province of Hainaut is given by Doursther as 293.4 mm; the foot of Mons, capital of Hainaut, is given by the *Regulateur du Hainaut*, (Mons, 1831) as 293.43 mm.

⁵ In 1820 the builders' foot of Zurich was made = 301.38 mm; the ordinary foot was equal to 133 Paris lines = 11.812 Br. in. = 300.0268 mm. The law of 1851, which adopted the value of 300 mm as the foot of the Republic, produced therefore no sensible change in this unit for Zurich.

Where used.	British Inches.	Mili- meters.	Where used.	British Inches.	Mili- meters.
Urbania, Italy	12.480	316.5	Rovigo, Italy	15.127	382.23
Freiburg, Baden	12.469	316.7	Cento, Italy	15.609	396.45
Innspruck, Tyrol	12.505	317.6	Tessin, Switzerland	15.631	397.0
Berne, Switz.	12.508	317.7	Heuse Cassel	16.704	398.9
Trieste, Austria	12.523	318.07	Jesi, Italy	16.759	400.26
Arable (anc.)	12.509	320.0	Ferrara, Italy	15.900	403.85
Vienne, France	12.700	322.58	Treviso, Italy	16.067	406.1
Paris (<i>pied de Roy</i>)	12.789	324.84	Ancona, Italy	16.125	409.57
Hautes Alpes	12.799	325.1	Fermo, Italy	16.711	424.46
Fossombrone, Italy	12.827	325.8	Bagna-Cavallo, Italy	16.957	430.7
Lisbon, Portugal	12.944	329.77	Halle, Prussia	17.046	432.95
Oporto, Portugal	12.996	330.0	Milan, Italy	17.134	435.2
Burgundy	13.010	331.2	Bergamo, Italy	17.235	437.77
Aveyron, France	13.071	332.0	Imola, Italy	17.310	439.66
France (<i>pied usuel</i>)	13.124	333.33	Morbegno, Italy	17.567	446.2
Hauts Alpes	13.128	333.45	Pergola, Italy	17.591	446.8
Botzen, Tyrol (?)	13.154	334.1	Como, Italy	17.765	451.2
Botzen, Tyrol	13.162	334.3	Lodi, Italy	17.927	455.33
Moscow, Russia	13.171	334.54	Vigevano, Italy	18.204	462.38
Cagli, Italy	13.193	335.1	Lippe-Detmold	18.237	463.2
Brie, France	13.198	335.2	Mantua, Italy	18.381	466.86
Chambery, Savoy	13.302	339.4	Crema, Italy	18.496	469.8
Porto Gruario, Italy	13.405+	340.49	Placenza, Italy	18.500	469.9
Clividale, Italy	13.403	340.5	Novara, Italy	18.542	470.95
Dauphiny	13.426	341.0	Brescia, Italy	18.544	471.0
Bonneville, Savoy	13.469	342.1	Mortara, Italy	18.581	471.96
Agen, France	13.477	342.3	Cotignola, Italy	18.706	475.1
Lyon, France	13.484	342.5	Camonica, Italy	18.720	475.47
Genoa, Italy	13.485	342.51	Alexandria, Piedmont	18.771	476.78
Verona, Italy	13.501	342.9	Faenza, Italy	18.889	479.77
Aquila, Italy	13.535	343.8	Fano, Italy	18.910	480.3
Policenigo, Italy	13.541	343.95	Cremona, Italy	19.036	483.5
Samos, Archipelago	13.624	346.04	Casal, Piedmont	19.056	484.0
Guilenne, France	13.640	346.45	Offida, Italy	19.057	484.04
Aviano, Italy	13.677	347.4	Bormio, Italy	19.095	485.0
Venice	13.691	347.74	Geneva, Switzerland	19.210	487.94
Pesaro, Italy	13.706	348.13	Forli, Italy	19.221	488.2
Russia (?)	13.748	349.2	Massa-Carrara, Italy	19.519	495.78
Babylon (anc.)	13.780	350.0	Nassau (duchy of)	19.685	500.0
Le Perche, France	13.855	351.9	Morro di Valle, Italy	19.790	502.65
Latissana, Italy	13.928	353.76	Genoa, Italy	20.227	513.77
Frankfort-on-Main	14.007	355.76	Recanati, Italy	20.523	521.27
Cracow, Poland	14.033	356.4	Loretto, Italy	20.533	521.3
Bordeaux	14.045	356.74	Modena, Italy	20.593	523.05
Hanau, Cassel	14.053	356.95	Chiavenna, Italy	20.756	527.2
Bassano, Italy	14.071	357.4	Reggio, Italy	20.902	530.9
Franche Comte	14.075	357.5	Mirandola, Italy	20.942	531.9
Russia (?)	14.135	359.0	Cesena, Italy	21.200	538.47
Dordrecht, Neth.	14.173	360.0	Guastralla, Italy	21.363	542.6
Fort Marlborough	14.400	365.75	Rimini, Italy	21.376	542.95
Trent, Austria	14.406	365.9	Parma, Italy	21.444	544.67
Feltre, Italy	14.451	367.05	Gualtieri, Italy	21.525	546.74
Canton, China	14.625	371.47	San Leo, Italy	21.589	558.5
Berlin, Prussia	14.828	376.62	Itavenna, Italy	23.016	584.6
Osimo, Italy	14.952	379.78	Lucca, Italy	23.225	589.9
Bologna, Italy	14.965	380.1	Cervia, Italy	23.565	609.33

* Doursther gives the foot of Botzen = 334.1 mm., and Nelkenbrecher gives it = 334.3 mm.

† These were foot measures of the Russian empire before the metrological reform introduced by Peter the Great, who adopted the English foot.

TABLE II. — *The POUND WEIGHT at different periods and in different localities.*

Where used.	Grains.	Grams.	Where used.	Grains.	Grams.
China (anc.)	2963.0	192.0	Recanati, Italy	5098.5	320.6
Crema, Italy	4126.6	267.4	Locarno, Switzerland	5098.1	330.35
Mechlin	4208.4	272.7	Botzen, Tyrol	5102.7	330.65
Brussels	4271.6	274.8	Ancona, Italy	5105.0	330.8
Mona	4310.3	279.3	Monaco, Italy	5113.5	331.35
Antwerp	4353.5	282.1	Fano, Italy	5142.1	333.2
Capua, Italy	4376.6	286.3	Lucca, Italy	5169.8	335.0
Gaeta, Italy	4552.5	295.0	Trent, Tyrol	5185.3	336.0
Ravenna, Italy	4623.5	299.6	Sluigaglia, Italy	5200.7	337.0
Belluno, Italy	4648.72	301.2	Stockholm, Sweden	5228.5	338.8
Venice, Italy	4649.8	301.3	Padua	5230.0	339.9
Rovigo, Italy	4651.3	301.4	Rome, Italy	5233.1	339.1
Tortosa, Spain	4701.5	304.65	Bogotá, Italy	5237.7	339.4
Turin	4743.9	307.4	Florence, Italy	5240.1	339.55
Cremona, Italy	4768.6	309.0	Modena, Italy	5250.1	340.2
Como, Italy	4787.1	310.2	Roveredo, Tyrol	5257.8	340.7
Nice, Piedmont	4908.7	311.6	Lucca, Italy	5282.4	341.0
Mantua, Italy	4870.4	315.6	Civita Vecchia	5285.5	341.2
Malta	4885.9	316.6	Bassano, Italy	5289.4	341.45
Genoa	4892.0	317.0	Pontremoli, Tuscany	5299.5	343.4
Sicily	4900.5	317.55	Lisbon	5312.6	344.25
Piacenza, Italy	4907.5	318.0	Alicante, Spain	5324.2	345.0
Ionian Islands	4908.3	318.05	Madrid	5330.3	345.4
Bucharest	4949.2	320.7	Ferrara, Italy	5337.3	345.85
Naples	4949.9	320.75	Genoa	5339.5	346.65
Palermo, Sicily	4930.08	3.0.76	Perugia, Italy	5332.8	348.8
Brescia, Italy	4953.8	321.0	Massa-Carrara, Italy	5333.6	348.85
Sienna, Tuscany	4961.5	321.5	Aragon	5339.2	349.3
Raconigi, Piedmont	4986.2	323.1	Eng. (Tower Pound) (*)	5400.0	349.91
Rome (anc.)	5000.1	324.0	Aragon	5414.3	350.0
Reggio, Modena	5015.5	325.0	Berlin	5412.9	347.75
Pisa, Italy	5027.9	325.8	Stockholm	5478.5	335.0
Bergamo, Italy	5032.5	326.1	Valentia, Spain (*)	5484.0	335.36
Parma	5037.1	328.4	Alicante, Spain	5493.9	336.0
Milan	5043.3	328.8	Stockholm, Sweden	5503.2	336.8
Parma	5061.8	328.0	Berne	5505.5	336.5
Forlì, Italy	5083.4	329.4	Soleure	5518.6	337.6

¹ The Tower-pound, so called, was the pound of the mints in England previously to 1526. In this year, under Henry VIII., it was replaced by the Troy pound. This tower pound was of eastern origin—hence called Easterling or Sterling—and was introduced into England in the time of Richard Cœur de Lion. Camden in his Britannia says, “In the time of Richard the First, monie coined in the east parts of Germanie began to be of especciall request in England for the purifie thereof, and was called Easterling monie, as all the inhabitants of those parts were called Easterlings; and shortly after, some of that countrie, skillfull in mint matters and allies, were sent for into this realme to bring the coine to perfection; which since that time was called of them sterling for Easterling.”

² The value here given for the Valentia pound of twelve ounces, viz., 355.36 grams = 5434.0 grains, was determined at the London Mint, from an authentic standard, in 1818. Altéa, from a standard said to be authentic, verified in 1829 at the prefecture of Marseilles, makes it exactly 356.0 grams = 5493.9 grains Troy, which is also the pound-weight of Alicante. Valentia had, in fact, four different pound-weights employed for different purposes, all of them multiples of the ounce; being equal, severally, to twelve, sixteen, eighteen, and thirty-six ounces. The ounce appearing to have been equal in 1818 to 29.613 grams = 257 grains, and in 1829 to 29 $\frac{1}{2}$ grains = 457.827 grains, all the four derivative pounds differed correspondingly. The large pounds of 1066 grams and 1068 grams were used for bread and provisions.

Where used.	Grains.	Grams.	Where used.	Grains.	Grams.
Nuremberg, Bavaria	5522.5	357.85	Memel, Prussia	6374.3	413.05
Coblenz	5523.2	357.9	Drôme, France	6389.0	414.0
Warsaw	5532.5	358.5	La Lozère, France	6392.1	414.2
Munich	5555.6	360.0	Nîmes, France	6393.6	414.3
Bologna, Italy	5586.5	362.0	L'Hérault, France	6399.0	414.65
Arabia	5659.0	366.7	Hauto Loire, France	6412.1	415.5
Esterling of Charle-magne (?)	5665.2	367.1	Pernau, Russia	6429.1	416.6
Hanover	5666.8	367.2	Grenoble, France	6440.7	417.35
Alexandria, Piedmont	5692.2	368.85	Posen, Prussia	6447.6	417.8
Amsterdam	5696.1	369.1	Courland, Russia	6448.4	417.85
England & United States	5749.0	373.24	Riga, Russia	6451.6	418.05
Stockholm, Sweden	5777.9	374.4	Lauban, Prussia	6480.2	419.0
Lithuania	5782.5	374.7	Vienna, Austria	6481.6	420.0
Brussels	5787.1	375.0	Gallicia, Austria	6483.1	420.1
Stockholm, Sweden	5801.0	375.9	Calais, France	6500.0	421.19
Salon, France	5811.8	376.8	Thorn, Prussia	6501.6	421.3
Warsaw, Poland	5846.5	378.85	Abbeville, France	6512.4	422.0
Aix-en-Provence	5851.2	379.15	Gothenburg	6535.6	423.5
Jever, Oldenburg	5859.7	379.7	Stockholm, Sweden	6536.2	423.54
Var, France	5864.3	380.0	Douay, France	6538.7	423.0
Königsburg, Prussia	5882.8	381.2	Montauban, France	6568.8	425.65
Ragusa, Dalmatia	5906.0	382.7	Thielt, Flanders	6595.8	427.4
Tarascon, France	5989.3	388.1	Clermont, France	6600.7	428.3
Arles, France	6379.9	391.25	Chambery, Savoy	6620.5	429.0
Orange, France	6043.3	391.8	Moissac, France	6622.8	429.15
Gap, France	6049.5	392.0	Dixmude, Belgium	6635.9	430.0
Apt, France	6134.4	397.5	Tournay, Belgium	6645.2	430.6
Lublin, Poland	6147.5	398.35	Courtray, France	6652.6	431.0
Pillau, Prussia	6164.5	39.45	Lille, France	6658.0	431.3
Patras, Greece	6166.8	399.6	Görlitz, Prussia	6688.4	423.4
Catalonia, Spain	6174.0	400.07	Bautzen, Saxony	6689.9	433.5
Barcelona, Spain (*)	6184.4	401.0	Ghent	6695.3	433.85
Jaroslaw, Austria	6230.0	403.7	Murcia	6710.0	434.8
Vienne, France	6236.2	404.1	Embrun, France	6713.1	435.0
Lenczicz, Poland	6252.4	405.15	Dantzig, Prussia	6720.8	435.5
Breslau	6256.3	405.5	Dresden, Saxony	6725.4	433.8
Cracow, Poland	6264.0	405.9	Zierickzee, Netherlands	6734.7	436.4
Wiburg, Russia	6270.8	406.1	Villefranche, France	6740.85	436.8
Cagliari, Italy	6273.2	406.5	Audenarde, Belgium	6819.55	441.9
Toulon, France	6274.0	406.55	Renaij, Belgium	6821.1	442.0
Hauto Garonne, France	6294.9	407.9	Grenoble	6832.7	442.75
Aveyron, France	6296.4	408.4	Grenada, Spain	6856.0	441.2
Avignon, France	6307.2	408.7	Dinant, Belgium	6946.1	450.1
Teraphene, Belgium	6314.9	409.2	Dover	6956.0	450.68
St. Petersburg	6318.0	409.4	Dresden	6961.6	451.1
Castres, France	6358.1	412.0	Travancore, India (*)	6972.0	451.78
Uzès, France	6359.7	412.1	England and U. S.	7000.0	453.59
Beaucaire, France	6372.0	412.9	Travancore, India (*)	7007.5	454.08
			Nancy, France	7032.5	455.7

* The name of this pound indicates also an eastern origin, but there is no eastern pound with which it can be at present identified. It continued to be used as the pound of pharmacy in France till superseded by the kilogram.

* Altés, whom Doursther follows, states that an authentic pound-weight of Barcelona, carefully verified at the prefecture of Marseilles in 1829, gave 401.0 grams as the exact value. He says, however, that a steel-yard and weight sent to London by a commercial house expressly for the trial, gave as a result, 6174.0 grains = 400.07 grams, which is the pound of Catalonia, as determined from an authentic standard in the London Mint. Both weights were doubtless in use.

** The first of these pound-weights, 6972.0 gr. = 451.78 grams, according to Doursther, is that by which the *circular* (government) receives pepper from the natives; the second, 7007.5 gr. = 454.0 grams, is that used by the same authorities in selling their pepper. It strikes us as a little remarkable that the selling unit should be greater than the buying unit; and one might be tempted to suspect that the terms had been inverted.

Where used.	Grains.	Grams.	Where used.	Grains.	Grams.
Poperingen, Belgium	7040.2	456.2	Fleessingen, Baden	7243.9	469.4
Vienne, France	7049.5	456.8	Durbuy, Belgium	7246.3	469.55
Madeira	7075.7	458.55	Glaris, Switzerland	7250.1	469.8
Lyons, France	7081.9	458.9	Cambral, France	7253.2	470.0
Lisbon, Portugal	7083.45	459.0	Bois-le-due	7254.7	470.1
The Asturias ^(*)	7098.88	460.0	Antwerp, Belgium	7256.3	470.2
Madrid ^(*)	7100.0	460.07	San Lucar, Spain	7259.4	470.4
Carthagena, Spain	7101.0	460.14	Menz	7263.2	470.65
Teneriffe	7103.5	460.3	Wiesbaden	7264.0	470.7
Cadiz	7106.6	460.5	Copenhagen	7266.0	470.85
Constance, Baden	7107.5	460.56	Bienne, Switzerland	7271.7	471.2
Corunna, Spain	7112.8	460.9	Biel, Alsace	7274.8	471.4
Amiens, France	7120.5	461.4	Strasburg	7276.4	471.5
Gibraltar	7122.0	461.5	Erfurt, Prussia	7284.0	472.0
Lindau, Bavaria	7128.7	461.8	Meissen, Saxony	7285.6	472.1
Grisons, Switzerland	7137.5	462.5	Augaberg, Bavaria	7294.9	472.7
Ivica (Mediterr.)	7145.2	463.0	Bourg-en-Bresse	7296.4	472.8
Leuze, Belgium	7158.3	463.85	Lauffenburg	7298.0	472.9
Bruges, Belgium	7159.1	463.9	Valencia, Spain	7312.0	473.81
Diest, Belgium	7160.6	464.0	Alicante, Spain	7325.7	474.7
Appenzell	7176.0	465.0	Stade, Hanover	7331.9	475.1
Ostend	7177.6	465.1	Tours, France	7341.2	475.7
Gueldres, Prussia	7179.1	465.2	Berg-op-zoom, Neth.	7342.7	475.8
Camenz, Saxony	7183.8	465.5	Kiel, Denmark	7355.0	476.6
Mons	7184.5	465.55	Udine, Italy	7361.2	477.0
Bruchsal, Baden	7189.2	465.85	Venice	7362.0	477.05
Valenciennes	7194.6	466.2	Nuremberg, Bavaria	7362.8	477.1
Cleves, Prussia	7196.1	466.3	Rovigo, Italy	7365.9	477.3
Altenburg	7200.7	466.6	The Mores	7379.7	478.2
Ciney, Belgium	7201.5	466.65	Hull, England	7387.0	478.67
Dresden, Saxony	7205.4	466.9	Buda-Pesth, Hungary	7402.9	479.7
Nordhausen, Prussia	7206.1	466.95	Basle, Switzerland	7410.6	480.2
Aix-la-Chapelle	7208.9	467.0	Frankfort-on-Main	7423.0	481.0
Liège, Belgium	7208.5	467.1	Pasau, Bavaria	7426.0	481.2
Lessines, Belgium	7209.2	467.15	Limoges, France	7436.8	481.9
Leipzig	7209.5	467.17	Zwolle, Netherlands	7438.4	482.0
Brunswick	7211.5	467.3	Frankfort-on-Main	7446.1	482.5
Carlsruhe, Baden	7213.0	467.4	Bayonne, France	7453.8	483.0
Cologne, Prussia	7214.6	467.5	Boltzberg, Germany	7458.5	483.3
Berlin, Prussia	7217.7	467.7	Flensburg, Denmark	7460.0	483.4
Stettin, Prussia	7219.0	467.78	Cassel	7473.0	484.24
Stuttgart, Wurt.	7219.3	467.8	Hamburg	7475.4	484.4
Frankfort-on-Main	7220.8	467.9	Lubeck ^(*)	7479.5	484.66
Mannheim, Baden	7221.6	467.95	Lubeck	7480.06	484.7
Middleburg, Neth.	7222.3	468.0	Bamberg, Bavaria	7492.4	485.5
Bourges, France	7227.0	468.3	Valais, Switzerland	7493.9	485.6
Berlin, Prussia	7230.0	468.5	Basle, Switzerland	7502.4	486.15
Ulm, Wurttemburg	7234.7	468.8	Padua	7507.8	486.5
Ath, Belgium	7237.8	469.0	Stockholm, Sweden	7510.9	486.7
Mechlin, Belgium	7241.6	469.25	St. Sebastian, Spain	7531.0	488.0

⁷ There are two Asturian pounds, both presumably derived from the old pound of Castile, the *libra menor* of sixteen Castilian ounces, and the *libra mayor* of twenty-four Castilian ounces. Doursther gives the *libra menor* at 460.0 grams and it is so given in the table above. Altés makes it 460.5 grams, which is the pound of Cadiz in the table. Of the two values of the *libra mayor* contained in the table, the first, 690.0 grams, is that of Doursther, and the second, 690.75 grams, is that of Altés.

⁸ The pound of Madrid, 7100.0 grains = 460.07 grams, is mentioned in the text as having been derived from the ancient pound of the kingdom of Castile; and the same seems to have been true of the pound of Carthagena, of Cadiz, of the Asturias, of the Canary Islands, and others. In the uncertainty of the true value of the Castile pound, it is not included in the list, but is presumably represented by that of Madrid. Kelly, from a mean of several weights, puts it at 7101.0 grains = 460.137, which is the pound of Carthagena, as verified from a standard *morc* (half pound) in 1818 at London.

Where used.	Grains.	Grams.	Where used.	Grains.	Grams.
Orcimont, Belgium	7538.7	488.5	Grisone, Switzerland	8029.5	520.3
Luneburg, Hanover	7546.4	489.0	Lenzburg, Switzerland	8089.6	524.2
Bilbao, Spain	7551.0	489.3	Cleves, Prussia	8106.2	525.4
Paris (<i>poids-de-marc</i>)	7554.1	489.5	Aurich, Hanover	8117.4	526.0
Calenburg, Hanover	7555.7	489.6	Schwartz, Switzerland	8148.3	528.0
Bastia, Corsica	7564.9	490.2	Freiburg, Switzerland	8157.5	528.6
Augaburg, Bavaria	7580.4	491.2	Havre de Grace	8159.1	528.7
Morlaix, France	7581.9	491.3	Brengarten, Switz.	8159.9	528.75
Ofen, Hungary	7586.5	491.6	Austrian Silesia	8173.0	529.6
Mons, Belgium	7589.3	491.75	Curiçao, W. I.	8199.2	531.3
Liège, Belgium	7593.5	492.05	Allevard, France	8218.5	532.55
Amsterdam, Neth	7595.2	492.16	Valencia, Spain	8226.0	533.04
Sourabaya, Java	7595.8	492.2	Murten, Switzerland	8229.3	533.9
Scotland (anc.)	7600.0	492.47	Alicante, Spain	8240.9	534.0
Cochin, Malabar	7607.5	492.96	Iverdon, Switzerland	8267.2	537.0
Basle, Switzerland	7611.2	493.2	Thun, Switzerland	8299.5	537.8
Wismar, Mecklenburg	7623.6	494.0	Mogadore	8305.7	538.2
Amsterdam, Neth	7625.1	494.1	St. Omer	8460.8	543.25
Bordeaux	7629.8	494.4	Gessenay, Switzerland	8480.3	550.1
Nimeguen	7639.0	495.0	Geneva, Switzerland	8488.6	550.7
Travancore, India	7649.1	496.3	Grenoble, France	8516.3	551.85
Aurich, Hanover	7666.8	496.8	Allcvard, France	8527.9	552.6
Zofflingen, Switz.	7686.1	498.05	Presburg, Hungary	8615.1	558.25
Bremen (¹⁰)	7690.0	498.3	Fiume, Austria	8622.1	558.7
Bremen	7694.4	498.59	Munich, Bavaria	8642.1	560.0
Christiania, Norway	7706.0	499.4	Vienna, Austria	8643.7	560.1
Patras, Greece	7709.2	499.56	Tyrol	8682.2	562.6
Grenada, Spain	7712.3	499.75	Linz, Austria	8742.4	566.5
Verona, Italy	7713.1	499.8	Ratisbon	8748.6	566.9
Zoll-verein	7716.17	500.0	Nyon, Switzerland	8827.3	572.0
Botzen, Tyrol	7731.6	501.0	Hof, Bavaria	8850.5	573.5
Tunis, Africa	7773.5	503.71	Schaffhausen, Switz.	8873.6	575.0
Dresden, Saxony	7781.0	504.2	Galicia, Spain	8882.9	575.8
Heidelberg, Baden	7782.5	504.3	Constance, Baden	8894.4	575.7
Rheinfelden	7785.6	504.6	Corunna, Spain	8892.1	576.2
Frankfort-on-Main	7798.0	505.3	Lindau, Bavaria	8907.6	577.3
Mannheim, Baden	7799.6	505.4	St. Gall, Switzerland	8913.0	577.55
Petershausen, Baden	7804.1	506.7	Appenzell	9021.8	584.5
Lausanne, Switzerland	7806.7	505.8	Amberg, Bavaria	9524.8	599.7
Mechlinburg, Schwerin	7848.6	508.6	Eger, Bohemia	9231.8	617.0
Rouen, France	7856.6	509.1	Crema, Italy	9629.8	624.0
Anspach, Bavaria	7861.2	509.4	Hof, Bavaria	9833.5	637.2
Rothenburg, Bavaria	7865.9	509.7	Lahr, Baden	10348.9	670.6
Calais, France	7867.4	509.8	The Asturias (¹¹)	10648.3	690.0
Nuremberg, Bavaria	7869.0	509.9	The Asturias (¹²)	10659.9	690.75
Hassfurt, Bavaria	7870.5	510.0	Grisone, Switzerland	10707.0	693.8
Elstadt, Bavaria	7872.0	510.1	Wunsiedel, Bavaria	10946.9	709.35
Frankfort-on-Main	7896.7	511.7	Milan	11767.9	762.55
Memmingen, Bavaria	7902.1	512.05	Bellinzona, Italy	12021.8	779.0
Salzburg, Austria	7910.6	512.6	Malta	12216.0	791.58
Cochin, Malabar	7930.0	513.85	Mogadore	12458.5	807.3
Prague, Bohemia	7939.2	514.45	Bergamo, Italy	12481.2	815.25
Belluno, Italy	7973.9	516.7	Mendrisio, Italy	12574.3	814.8
Alicante, Spain	7986.2	517.5	Lugano, Switzerland	12668.4	820.9
Culmbach, Bavaria	7987.0	517.55	Barletta, Italy	13055.8	846.0
Munchberg, Bavaria	7987.8	517.6	Locarno, Switzerland	13194.4	880.9
Soleure, Switzerland	7998.6	518.3	International	15432.35	1000.0
Cronach, Bavaria	8007.8	518.9	Valencia, Spain (¹³)	16450.88	1066.0
Troyes, France	8024.8	520.0	Valencia, Spain	16481.75	1068.0
Berne, Switzerland	8026.4	520.1	Port Mahon	18520.4	1200.1

⁹ The pound of Lubeck was determined at the London Mint, from standards sent for the purpose by the British consul, to be 7479.5 grains = 484.66 grams. Another determination made by Schumacher on the spot, gives 7480.06 grains = 484.7 grams.

¹⁰ By the verification at the London Mint (date not given) of an authentic standard pound-weight of Bremen, the weight was found to be 7690 grains = 498.3 grams. Nelkenbecher states that an ordinance of the senate, of the year 1818, fixed the pound-weight at 498.59 grams = 7694.4 grains Troy.

PREVALENCE OF THE METRIC SYSTEM.

**STATEMENT AS TO THE EXTENT TO WHICH THE METRIC SYSTEM HAS BEEN
INTRODUCED AMONG DIFFERENT PEOPLES, WHETHER BY COMPULSORY OR
BY PERMISSIVE LEGISLATION.**

I. States in which the Metric System is obligatory by law.

[In some cases, as in the South American States, in Turkey, and in Egypt, the compulsory legislation is imperfectly enforced among the people, but the system is employed in the custom houses and other business of the governments.]

States.	Original Legisla-tion.	Obliga-tory Effect.	Population.	Remarks.
Argentine Confederation .	1863	1873	1,876,435	Imperfectly enforced, except in government business.
Austro-Hungary	1872	1876	35,904,435	German names allowed.
Belgium	1816	1856	5,387,05	Old names used before 1838.
Brazil	1862	1873	11,780,000	Diamonds sold by old weig't.
British India	1871	1871	190,277,654	Time of obligatory effect indeterminate.
Chili	1848	1863	2,166,000	From 1848 used for coin.
Costa Rica	1857	1858	165,000	Imperfectly enforced, except for government business.
Ecuador	1856	1866	1,784,741	All measures inspected and verified biennially.
Egypt	1876	1876	5,203,000	In use previously for coin.
France	1793-5	1840	36,102,321	A provisional system, 1793; system fully organized, 1795; a "systeme usuel" allowed, 1812; complete system enjoined, 1837, and made obligatory, 1840.
French Colonies	"	"	5,216,631	In use previously in a number of states.
Germany	1868	1872-5	41,060,695	Common names allowed.
Greece	1836	1836	1,457,894	Imperfectly enforced, except for government business.
Guatemala	1857	1858	280,000	In some states adopted previously.
Italy	1861	1863	28,801,154	
<i>Carried forward</i>			365,462,566	

States.	Original Legislation.	Obligatory Effect.	Population.	Remarks.
<i>Brought forward</i>			365,462,565	
Mexico	1857	1862	9,611,838	Not yet universally in use, but fast gaining ground.
Netherlands	1816	1821	8,716,002	Old names used till 1870; after that optional for 10 years.
Dutch Colonies	"	"	22,591,461	Reform movement begun only in 1875.
Norway	1877	1878	1,763,000	Imperfectly enforced, except in government business.
Peru	Before 1850	1869	8,417,000	Obligatory in Lisbon from 1860.
Portugal	1852	1862	8,900,570	Imperfectly enforced, except in government business.
Roumania	1864	1866	4,605,000	In some provinces obligatory from 1855; in all Spain from 1859.
Spain	1849	1859	16,835,506	Permissive during 1881 and 1882.
Spanish Colonies	"	"	6,419,339	A metric foot of 30 centimeters is used, and a metric pound of 500 grams.
Sweden	1876	1883	4,341,559	Optional from 1871.
Switzerland	1861	1867	2,669,247	Coin metric from 1848. System compulsory only in government business.
Turkey ¹	1869	1874	37,369,000	Imperfectly enforced, except in government business.
U. S. of Colombia	1853	1854	2,794,473	Imperfectly enforced, except in government business.
Uruguay	1862	1867	454,478	
Venezuela	1857	1873	1,784,194	
Total			487,825,282	

II. *State in which Metric weight is obligatory by law, but not Metric measures of length, surface, or capacity.,*

State.	Original Legislation.	Obligatory Effect.	Population.	Remarks.
Denmark	1852	1863	1,784,441	Danish coin metric since 1874.
Danish Colonies	"	"	127,401	
Total			1,911,842	

¹ The population of the Turkish Empire, as given, includes the tributary states as they stood before the Berlin Congress of June, 1878, with the exception of Egypt and Roumania.

III. *States in which the Metric System is permissive.*

States.	Date of Law.	Population.	Remarks.
Great Britain	1864	31,845,379	
British Colonies	"	12,139,087	
United States	1866	38,555,983	Census of 1870. Probably at present over 45,000,000.
Total		82,540,449	

IV. *State in which the Metric System is neither obligatory nor permissive.*

State.	Population.	Remarks.
Russia (proper)	65,704,559	
Russian Poland	6,026,421	
Finnland	1,832,138	
Caucasus	4,803,332	
Siberia	3,428,867	
Kirghiezz Steppes	1,803,708	
Toorkistan	1,996,920	The use of the metric system in the custom houses of the empire was ordered in 1870. In 1876, an Imperial Commission visited Paris to inquire into the results of the metrological legislation of western and central Europe, and reported favorably. A considerable number of societies have already adopted the system.
Total	85,685,945	

SYNOPSIS OF LEGISLATION FAVORING THE METRIC SYSTEM.

[The following, which presents with a detail which the plan of the foregoing table would not allow the history of metric legislation, is extracted from the able and comprehensive paper prepared by Mr. J. K. Upton, Chief Clerk of the Treasury Department of the United States, to accompany the response of the Secretary of the Treasury to the resolution of the House of Representatives of Nov. 6, 1877.]

BARNARD'S METRIC SYSTEM, from which the foregoing extracts are taken, Third and Revised Edition with supplement more than doubling the original matter of the book, and with index of over 2,000 references, will be published Sept. 1, 1879, by vote and under direction of the American Metric Bureau, General Offices 6, 7, and 8, No. 32 Hawley St., Boston.

The work contains nearly 500 pages, and with its full index becomes a Cyclopedic of the Metric System, its history and advantages. Each member of the American Metric Bureau, the Society for introducing the Metric System into the U. S., receives a copy without charge. Though more than double the size of the original book published by Van Nostrand of N. Y. at \$3.00, single copies will be furnished at \$1.50, and extra copies to be given away at less than cost. All the best metric publications can be had from the Society's offices, either without charge or at half-price. Membership and coöperation is solicited.

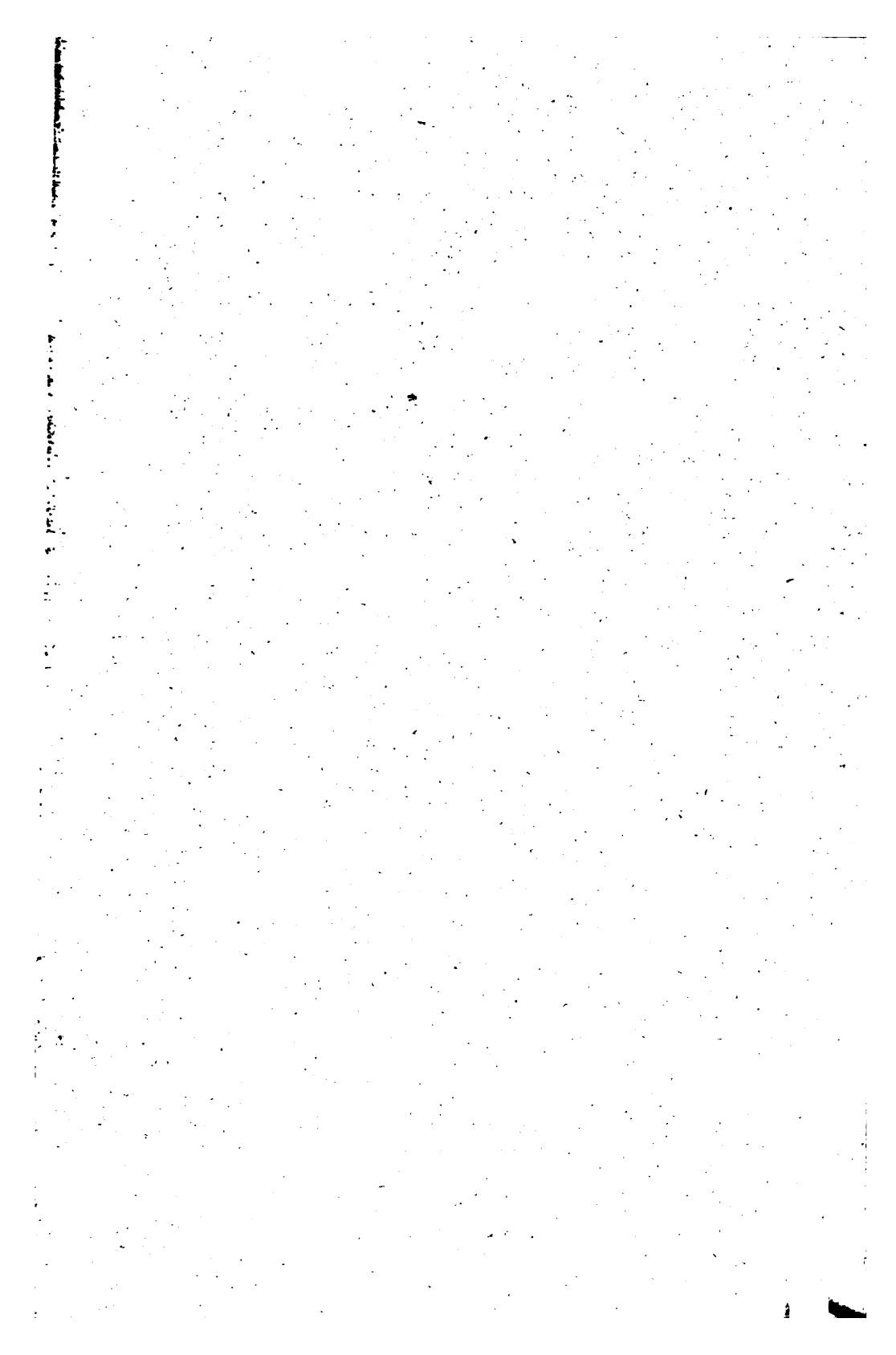
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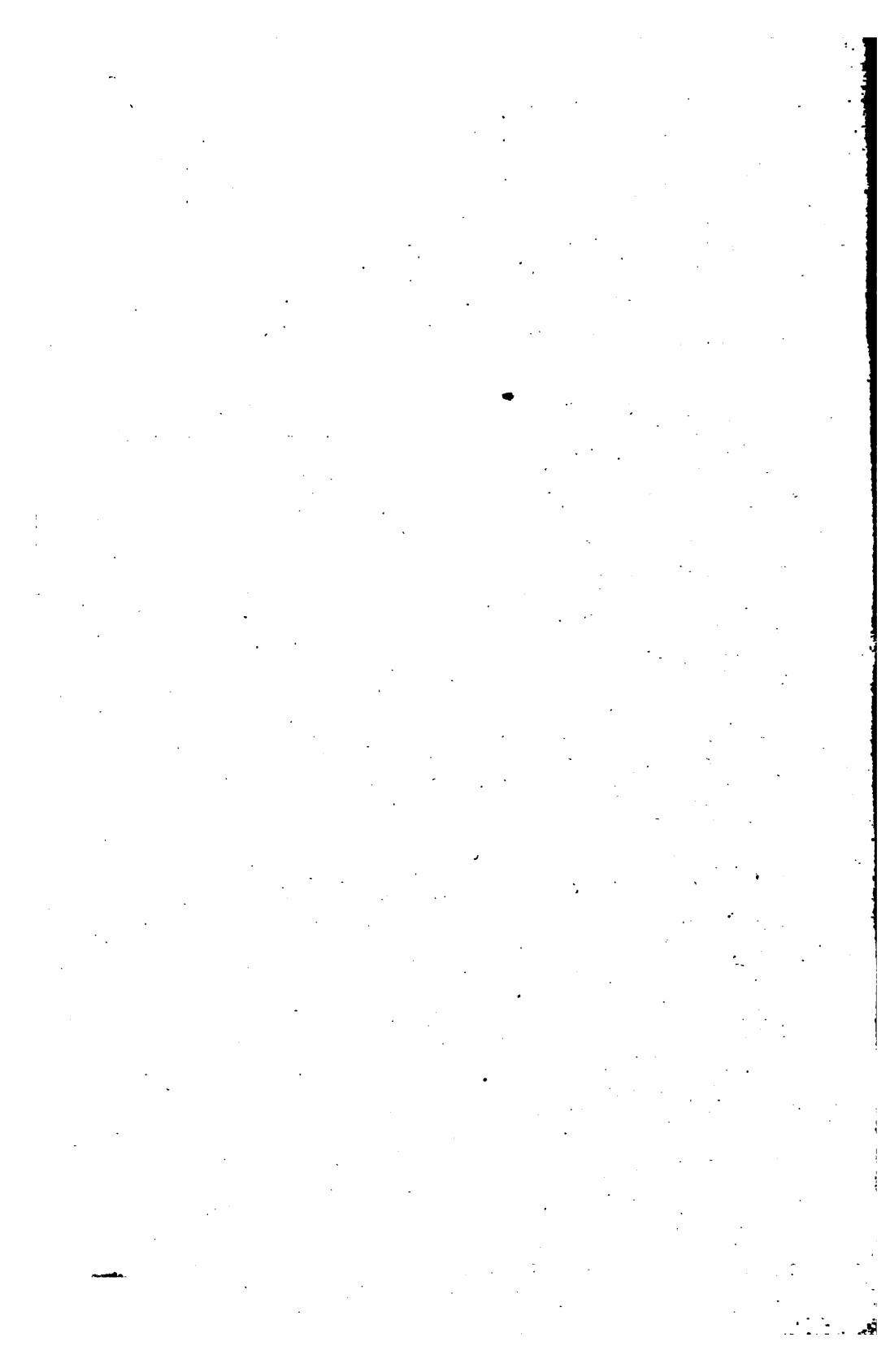
MELVIL DEWEY,

Secretary American Metric Bureau,

P. O. 260,

Boston.





THE POSSIBILITY
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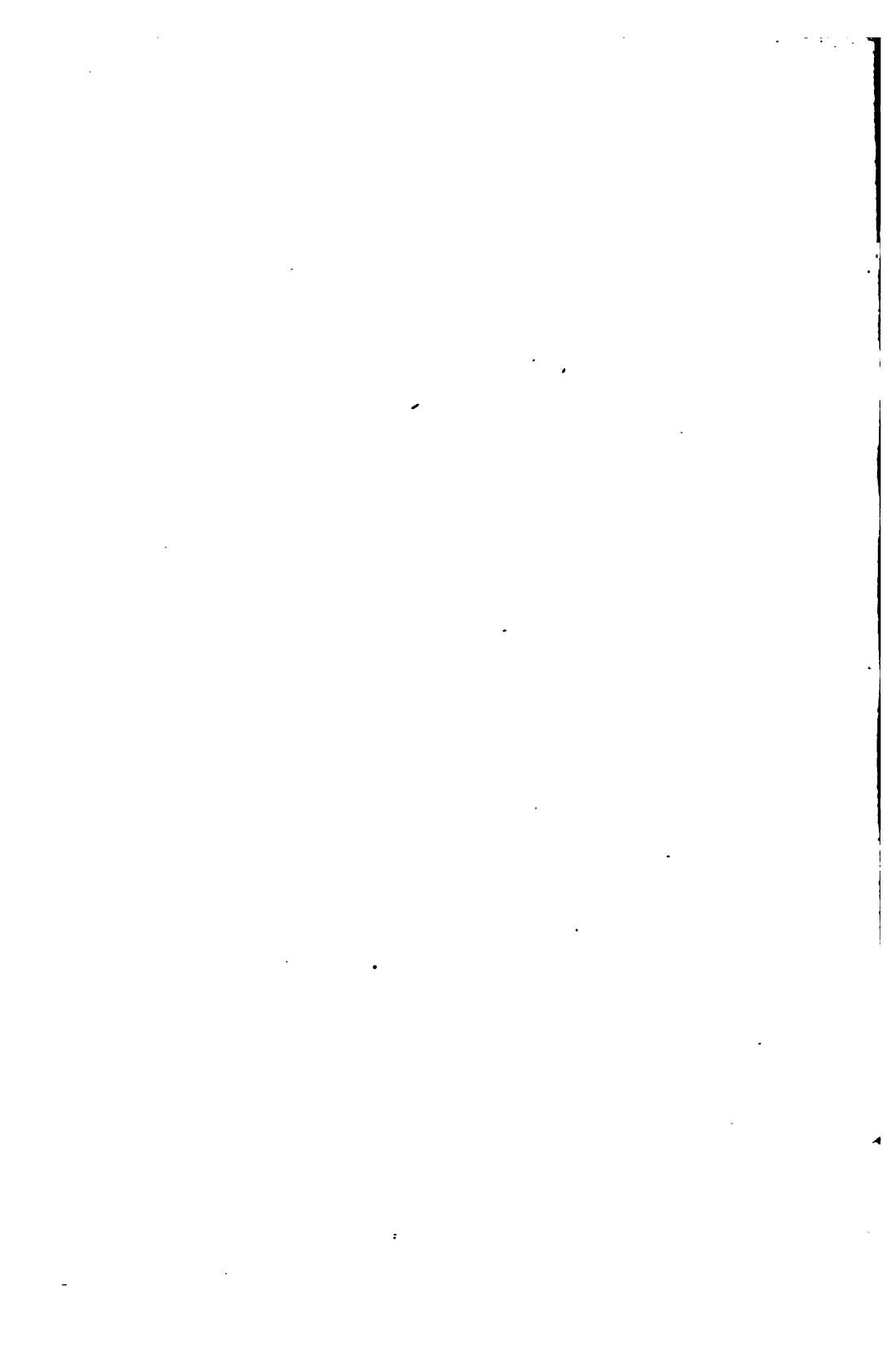
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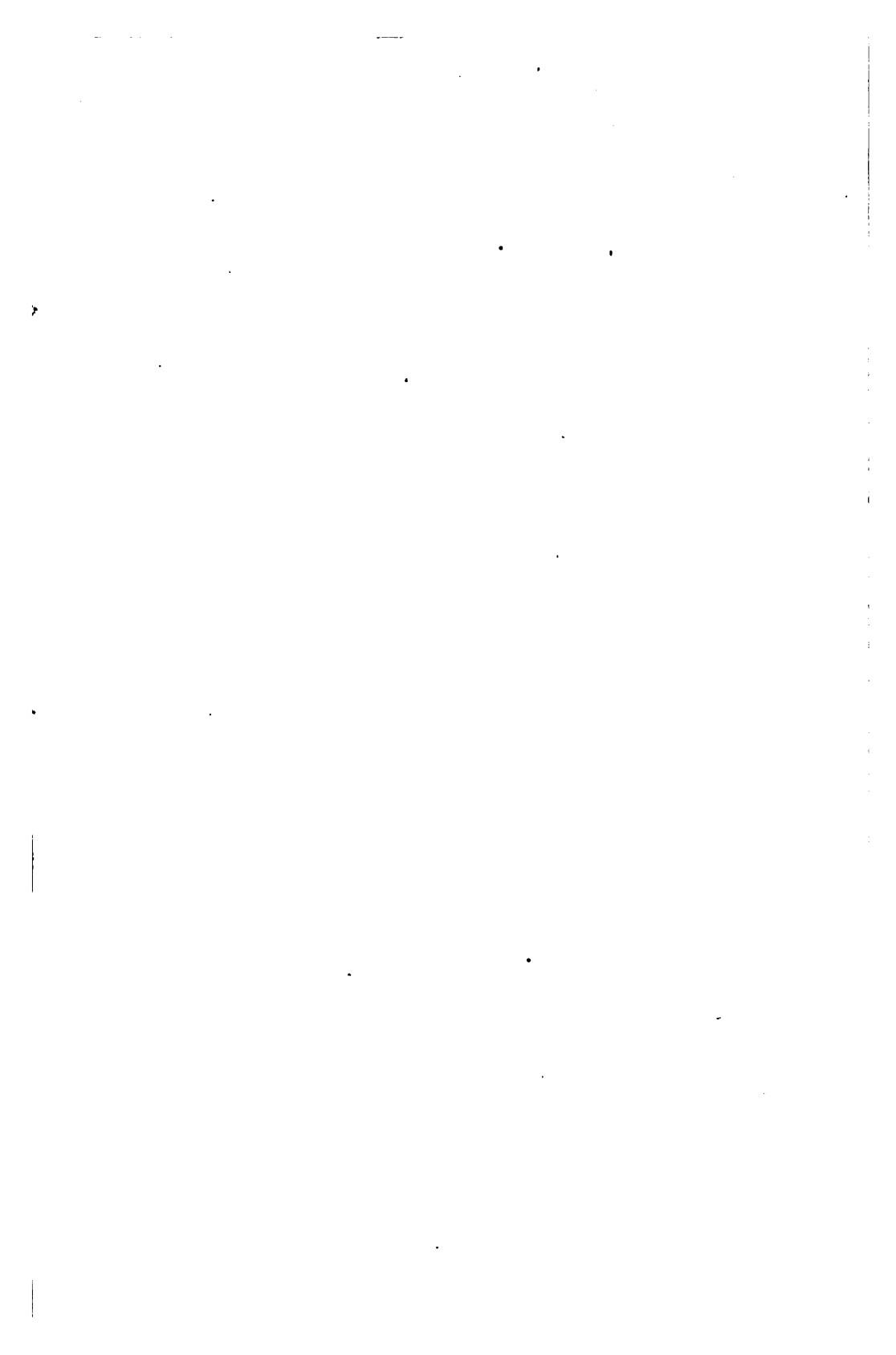
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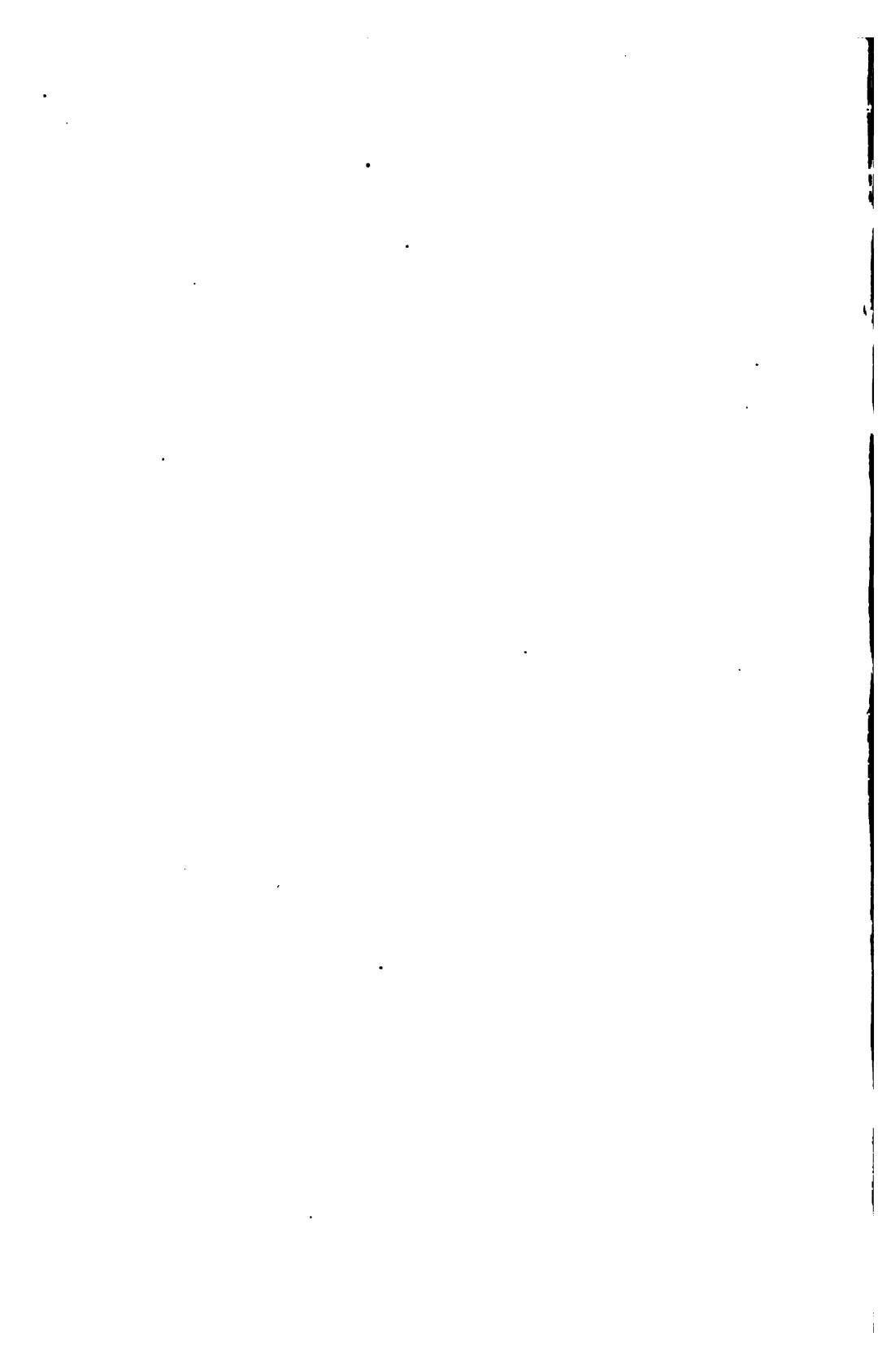
President American Metrological Society.

—
FROM THE PROCEEDINGS OF THE
AMERICAN METROLOGICAL SOCIETY.
—

DECEMBER, 1879.







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THE POSSIBILITY
OF AN
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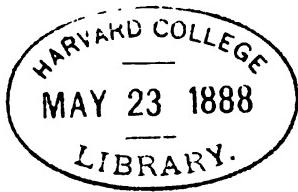
BY

Fred. W. Langmuir, M.A.
F. A. P. BARNARD, LL.D.

President American Metrological Society.

FROM THE PROCEEDINGS OF THE
AMERICAN METROLOGICAL SOCIETY.

DECEMBER, 1879.



Columbia University

THE POSSIBILITY OF AN INVARIABLE STANDARD OF VALUE.

By President F. A. P. BARNARD.

At the time when the earliest transactions in the nature of purchase and sale took place, of which any record has come down to us, money in the modern acceptance of the term did not exist. There was nevertheless money. Commerce had long passed beyond the primitive stage of barter. It was one of the earliest discoveries of advancing civilization, that there are certain forms of property which men desire to accumulate, and for the sake of acquiring which they will readily part with any other description of property which they may happen to possess in excess of their immediate wants. The kind of property thus preferred is not necessarily the same among all peoples. It naturally depends on the varying tastes, habits, or occupations of different tribes or nations. Some are fond of ornament, and are attracted by objects which contribute to display. Others are more practical, and are eager to possess themselves of whatever may most contribute to sustenance or comfort. Every race perhaps has manifested both these predilections successively, delight in gew-gaws being characteristic of the more primitive period, and preference for the useful marking a more advanced state in the progress of growing civilization. When the first of these sentiments prevails, brilliant feathers or slightly shells may be objects of desire ; when the second predominates, such substantially useful things as salt, or sheep, or cattle, or implements of labor, may be most highly esteemed. The Latin word *pecunia*, signifying money, is indeed derived from *pecus*, a flock or herd ; and writers on the subject are accustomed to speak of this etymology as affording sufficient evidence that among the nomadic races of high antiquity, cattle

were used as money. The propriety of this assertion is, however, questionable ; for though the general acceptability of cattle may have facilitated barter, it could not have given to animals the properties of divisibility, portability, and permanent value, which are the essential elements of money as it is at present understood. *Pecunia* in its original sense, indeed, probably did not signify money, but wealth, the principal wealth of the early dwellers on the borders of the Mediterranean having consisted in their flocks and herds. In Domesday book, as Ruding observes, *pecunia* usually means cattle considered merely as property and not as money ; and in some instances the word seems to comprehend possessions of every description ; while in the special sense of *money* it occurs but three times. In the sense of cattle, he adds, it continued to be used much later, certainly as late as 1150. And he further remarks that the equivalent word *cattle* in English has likewise a double meaning of the same kind, being, with a little difference of orthography, identical with *chattel*, which now signifies any kind of personal property. This word, he shows also to have been sometimes used for price or payment, a figurative use analogous to that of *pecunia* for money.

It was only after men had become acquainted with the precious metals, and had acquired some skill in working them, that a medium of exchanges universally acceptable became a possibility. The facility with which these substances may be divided and subdivided and afterwards reunited by fusion without loss, their beauty, inalterability, and durability, and their great comparative value, a consequence of their scarcity and the labor required to obtain them, adapt them peculiarly to serve as the material of money. It is not, nevertheless, to be supposed that they were assigned to this function by common agreement or premeditated concert of action among men. Money was not a creation but a growth. It was only by a gradual modification of usages that barter, or the exchange of commodities indiscriminately, gave place to sale, or the exchange of commodities generally for definite amounts of a single commodity invariable in kind. But this modification of usage did not alter in any respect the essential nature of the transaction. It was still an exchange of commodity for commodity,—that is, of one recognized value

for another, and not of value on the one hand for a sign of value on the other. Accordingly gold and silver, though used as money, did not for a very long time receive any particular form to indicate this peculiarity of use ; nor were any other means employed to determine the quantities of these metals transferred, than those which were common in the transfer of ponderable merchandise in other forms. They were weighed out in scales, and the quantities were expressed in the ordinary weights of the country where they were used. Sundry transactions of this kind are recorded in the early history of the Hebrew race ; as when Abraham bought the cave of Machpelah in the land of the children of Heth, and weighed unto Ephron as the price four hundred shekels of silver, current money with the merchant ; or as when Jeremiah bought the field of Hanameel that was in Anathoth, and weighed him the money, even seventeen shekels of silver. The allusions in the scriptures to this early practice of weighing money are frequent. Job says of wisdom, it cannot be gotten for gold neither shall silver be weighed for the price thereof. Zechariah says, I said to them, if ye think good, give me my price, and if not, forbear ; so they weighed for my price thirty pieces of silver. Isaiah says, wherefore weigh ye money for that which is not bread, and your labor for that which satisfieth not ? In the usually received version of the Bible, the word in this passage meaning *weigh* is translated *spend*.

The disadvantages attendant on the employment of gold and silver in the rough as money, are considerable and obvious. The necessity of resorting to the balance in every payment, large or small, is not only an inconvenience, but involves the danger of inaccuracy when commodities of so great intrinsic value are dealt with, and it offers a large opportunity for the practice of fraud. Moreover, where fraudulent intent is presumably absent, the uncertainty which must always exist as to the purity of the metal weighed, makes the balance an insufficient test of value. The precious metals as reduced from their ores, or as found native in the earth, are invariably alloyed with baser metals, and are purposely so alloyed for all the uses to which they are applied in the arts ; so that they are never found in commerce perfectly pure. The exact value of any mass of gold or silver can only be

ascertained by the laborious process of assaying. For the sake of expedition, dealers in early times used to employ the touch-stone for such determinations ; but this method furnishes only a rude approximation to the truth.

Gold and silver seem to have been for a long time current as money, before any attempt was made to obviate these disadvantages. The expedient was at length adopted of giving to the masses employed as currency, a uniform weight and a uniform degree of purity or fineness ; and of impressing upon each one a stamp attesting its character in these respects. Such a stamp, however, could command confidence only so far as the authority by which it was affixed was known and respected. The responsibility of regulating the metallic medium of exchange and of furnishing a guaranty of its genuineness, was naturally, therefore, assumed by the supreme authority of the state. As to the place where, the date at which, or the ruler by whom this important step of progress was first taken, writers are not agreed. The Greeks generally ascribed it to Phidion, king of the petty island of Ægina, who flourished about 900 years B. C. The Romans claimed the honor for their second king, Numa Pompilius, from whose name is said to have been derived the word *nummus*, signifying money.* Herodotus and Zenophanes gave the credit to the Lydians without naming the Lydian king to whom it personally belonged. Rasche, in his elaborate *Lexicon Universæ Rei Numerariae*, after a careful examination of the evidence, inclines to favor the claim of Phidion ; but the great probability is that the invention of an expedient so useful and so obvious was not due to the ingenuity of any single individual, but presented itself in many quarters and to many minds about the same time.

In the beginning, the masses of metal used as money were not, as at present, circular disks impressed on all their surface, and therefore protected against fraudulent practices by the stamp, but they had the form of wedges (*cunei*) whence the word, coin.

The stamp served therefore the same end as the Goldsmiths' Hall-mark at the present day, affording rather a guaranty of

* More commonly derived from *numeratum*—numbered, counted out, paid down (intellige *argentum*).

purity than a certificate of weight. The further perfection of the art of coinage made it a presumed security for weight also. Intrinsic value, however, dependent on weight and fineness, was the essential quality of the ancient money ; the stamp was merely the evidence of the presence of this quality—it was not a thing valuable in itself, or esteemed to be a legitimate substitute for value ; and hence, coins, as such, did not receive any distinctive names ; the only names they bore, were the names of the weights of metal which they severally contained. Thus the Hebrews had for their monetary nomenclature, the *shekel*, the *mina* and the *gerah* ; the Greeks, the *talent*, the *mina* and the *drachma* ; and the Romans, the *as*, *libra* or *pondus* ; all of which were names of weights in use for ordinary commerce. The *libra* and the *pondus* as weights and as names of the monetary units followed the Roman conquests into Iberia, Gaul, Germany and Britain ; in the last named of which countries the latter form still survives. The former survives also in Italy as the *lira*. In Germany, the pound for monetary purposes was early superseded by the marc or half-pound, which name continues to be used. In France, on the establishment of the Metric System at the close of the last century, the *livre* (*libra*) gave place to the franc.

But though the pound is still the monetary unit in Great Britain, it is a pound from which the idea of weight has been long dissociated ; and though eighty or ninety years ago, money continued to be reckoned in livres in France, the livres of weight and livres of money had less to do with each other in that country than had pounds of weight and pounds of money in England. The British money pound was originally a pound weight of silver —A Tower pound being understood, equal to 5400 troy grains;—It has now less than one-third of that value. The silver livre of France, originally identical as money with the pound weight of Charlemagne, viz : 5666 grains troy,—a little less than a troy pound,—had degenerated before being superseded, in 1785, by the franc, to only one twenty-fifth part of that original amount.

But though the pound, the livre and the marc were at once units of money and of weight, they were units of account only and not of coinage. Convenience demanded that the actual coins should be more easily portable ; and hence the money in the

hands of the people consisted of pieces of silver or gold in simple fractional relations to the money unit. The earliest of the silver coins of England of which the denomination has survived, was the *penny*, (a name probably derived from *pendo*, to weigh) of which two hundred and forty were struck from a pound. The next, introduced by Edward I, was the groat (Danish *groot*, great), equal to four pence—so called because compared with the penny it was a large coin. The shilling (doubtfully derived from the Hebrew *shekel*, to weigh), equal to three groats or twelve pence, was first coined by Henry VII, in 1504. The crown and half-crown, equal respectively to five shillings and two and a half shillings, appeared in 1552, under Edward VI. In France, the early coins were, sols (Latin *solidus*, substantial), twenty to the livre ; deniers (Latin, *denarius*, tenth—although in France a denier was the twelfth part of a sol); and mailles, each equal to eight deniers or two-thirds of a sol. Later came écus or couronnes, and at the close of the last century, francs. Some of these terms have relation to weight but only indefinitely. Most modern coins and some ancient not above mentioned, bear names from which the idea of weight is excluded altogether. Among these are the several staters among the Greeks, called the Daric, the Philip and the Alexander ; and in later times in Western Europe, the ducat, the sequin, the florin, the piastre, the pistole, the doubloon, the scudo, the real, the louis, the frederic, the napoleon, the carolus, the guinea, the sovereign, and the thaler or dollar. The use of terms like these has gradually accustomed men to look upon money as a kind of artificial creation, deriving its peculiar character and potency as an instrument of commercial exchanges from the authority of law. In the theories of some of our modern writers on this subject, in fact, intrinsic value in the material of money is nothing, and law is everything. Mr. Cernuschi's definition of money, for example, is that money is "an artificial value created by law."

To the prevalence of this notion among men is to a great degree to be attributed the general degradation during the past centuries of the coinage of the European nations in respect to weight. The process of coinage itself, originally introduced to insure truthful weight, has, by a direct perversion of the design

of its institution, contributed to facilitate this degradation. Originally, men made themselves sure of the quantity and quality of their money by weighing and testing it for themselves. When governments undertook to relieve them of this burden, the government stamp was accepted as a guaranty that quantity and quality were both present. To a needy and unscrupulous ruler, the opportunity here presented to practice on the confidence of the people by reducing the quantity of metal in the coinage or debasing its quality, offered a temptation to cupidity too strong to be resisted. While the stamp remained the same, and the appearance of the coin was not greatly altered, the fraud remained unsuspected and the circulation continued to be free. It was therefore not an unnatural consequence that, even after the detection of these practices, men should find in the fact of such free circulation of a degraded and debased coinage, a reason for considering intrinsic value in money a property not necessarily indispensable.

The idea of a measure of values without any value itself is however completely at variance with the original conception of money; according to which money is itself a commodity, and price paid is a real equivalent for merchandise received. According to this new conception, money is a mere symbol, and its denominations are counters in exchange for which merchandise is given on the faith that these same counters will command an equivalent at the pleasure of the holder, in any other form of merchandise which he may select. Such a faith cannot exist, however, unless the exchangeability of such fictitious values for real values is guaranteed by an authority which commands universal confidence, or which has the power to enforce acceptance ; and such authority can only be found in the state. Artificial or fictitious money, therefore, can only be sustained by laws making it what is called a "legal tender." Natural or real money requires no such support. It follows that artificial money can only be current as money within the limits of the state by which it is created. Transported to a foreign country, it loses its properties altogether.

The artificial money, however, here spoken of, must not be understood to include promissory notes, whether notes of banking establishments or those of governments, which engage to pay,

on demand, real money in definite amounts. Such notes are not money at all, but certificates of deposit, payable to bearer.

Since artificial money loses its currency in exchanges when exported, it follows again that commerce between nations must be conducted through the instrumentality of real money. Commerce between nations is principally barter. When the balance of trade inclines neither way, it is wholly so ; yet it is a barter in which the inconvenience of direct exchanges in detail between the individual participants is avoided by a system of credits which is one of the most practically useful of the inventions of modern civilization.

Money being indifferently exchangeable for commodities of all kinds, it forms a convenient, and for the time being an entirely correct, measure of the relative values of such commodities. An article which will command one hundred dollars in the market, must be regarded as being twice as valuable as one which will at the same time command only fifty dollars. If half a dozen dealers are selling wheat on the same day in the same city at one dollar a bushel, and all find equally willing purchasers, we are justified in saying that these same lots of wheat, taken quantity for quantity, are of equally good quality. But when we compare articles sold to-day with others, similar or dissimilar, sold twenty years ago, the inferences we might draw from their relative prices are by no means so unquestionable. Two circumstances may disturb the correctness of the conclusion. In the first place, one or more of the commodities considered may in the interval have grown positively more or less valuable relatively to other commodities ; and secondly, all commodities may have risen or fallen in money value—that is in price—during the same interval. This latter description of change indicates a variation in the absolute value (if there is such a thing) of money itself. An illustration of change of the first kind, viz : in the relative values of commodities themselves, may be found by comparing, in the table of prices given by Mr. Horton among the papers appended to the report on the international monetary convention of 1878, the prices of pig-iron per ton, and of wheat per quarter, in the London market, in the years 1873 and 1878 respectively. Both commodities had fallen in price during the interval ; but iron had

fallen from 127 shillings to 43 shillings—about 66 per cent. ; and wheat from 55 shillings 11 pence, to 39 shillings 7 pence—less than 29 per cent. A ton of iron in 1873 was worth more than two bushels of wheat : while in January 1879, it was worth only a little over one bushel.

Varieties of the second kind, viz., in the value of money, are strikingly apparent in general, only in comparing periods of time somewhat distant from each other. Real money is of course here intended, for the fluctuations of artificial moneys, like the French assignats, and the issues of the Colonial governments before, and of the Continental Congress during, the war of the American Revolution, are disturbances of a temporary and local character ; whereas the change we are now considering relates to the money of the whole world—and this we have seen is necessarily real.

A variation in the value, or as it is called, the purchasing power of money, is best demonstrated by comparing the average prices of a large number of staple articles of commerce for a succession of years, or for years separated from each other by a considerable interval ; and from a combination of the whole, deducing a general average for each of the epochs compared. This method has been employed by Mr. Jevons in discussing the facts and causes of the fall of prices in England early in this century. As the purpose at present in view is illustration merely, a few examples will be here presented of the comparative prices of some of those articles which, however subject to moderate fluctuations of price from year to year, are, from their intimate relations to human wants and human subsistence, commonly regarded as permanently preserving an unvarying mean value, taking the money prices of these articles as they stood, five or six hundred years ago, in France, and placing them by the side of the prices borne by the corresponding articles in the markets of to-day. The authority for these early prices is a valuable compendium of history and statistics, entitled : “*Essai sur les monnaies, ou reflexions sur le rapport entre l'argent et les denrées*,” published in Paris, by royal approbation and privilege, in 1746.

In order to make the comparison justly, it is necessary to reduce the prices, which are given in *livres, sous* and *deniers*, to troy

grains of fine silver according to the value of the livre at the time, and to convert the amount into dollars by dividing by 371.25 grains, the weight of fine silver in one dollar.

The first example I select is the price of a bushel of wheat in 1290. In that year one setier (4.43 Winchester bushels) of wheat sold in France for eight sous, containing 442.56 grains troy of fine silver, which is equivalent to \$1.20 nearly. The cost of the bushel was therefore 27 cents. In January, 1879, according to Mr. Horton, the price of wheat per bushel in New York was \$1.10. It appears also from the foregoing that the value of the sou, in 1290, was fifteen cents. It is now only one cent. The next example is the price of the bushel of wheat in France, about fifty years later, or in 1342. The sou is now worth about $3\frac{1}{2}$ cents, the setier of wheat sells for 44 sous and $5\frac{1}{2}$ deniers, and the bushel costs a little over thirty-four cents.

In 1500, the sou is $4\frac{1}{2}$ cents, the setier of wheat costs 30 sous, and the bushel 32 cents, or nearly the same as a century and a half before.

In 1600, the sou has fallen to $2\frac{1}{2}$ cents, the setier of wheat is sold for 100 sous or 5 livres, and the price per bushel has risen to nearly fifty cents.

In 1700, the sou is worth hardly $1\frac{1}{2}$ cents, the setier of wheat brings 24 livres in the market, and the bushel is worth nearly \$1.35.

It may be interesting to compare these prices with those paid in England at corresponding epochs, as they are given by Bishop Fleetwood in his *Chronicon Preciosum*. From this it appears that, in 1500, the bushel of wheat sold in London for one shilling, the shilling having at that time the value of 40 cents of our Federal money.

In 1553, the price had risen to 52 cents, and from this date to 1562 it remained unchanged. Subsequently it underwent singular fluctuations, having fallen in 1574 to less than 22 cents, and risen in 1594 to nearly \$3.50. But these irregularities, having been caused by temporary disturbances of the operations of industry and of the exchanges of commerce, have no bearing upon the general question we are considering.

The list of prices in France, to which reference has been made above, embraces the prices of many other articles of merchandize besides wheat, and includes also those of some descriptions of live stock. Occasionally are mentioned the wages of domestic servants and farm laborers. The following are a few examples :

In 1290, a sheep sold for 49 cents ; in 1313, for 79 ; in 1325, for 72 ; and in 1405, for 76 cents.

In 1313, an ox sold for \$12.09 and a mule for \$12.70.

In 1325, a calf sold for 76 cents, and a horse for \$8.48.

In 1256, the daily wages of a laborer amounted only to $7\frac{1}{2}$ cents.

In 1713, a vine dresser was paid $4\frac{8}{10}$, or hardly 5 cents per day.

It is to be presumed that subsistence was also furnished.

In 1739, a coachman appears to have been paid for his services \$14.76 per annum, and sometimes less. This is but about 4 cents a day, and is also doubtless in addition to subsistence. At this time wheat was 93 cents per bushel.

It is very evident from these examples that prices have progressively risen in Europe from the earliest times of which we have any record ; the extent of increase within the last six hundred years having been not less than fourfold : while owing to the gradual degradation of the coinage in weight, the nominal or apparent increase has been much greater. Gold and silver money, therefore, though a very convenient measure of comparative contemporaneous values, is not in a proper sense, what it is commonly called, a standard of value. The question accordingly naturally presents itself, is such a standard possible ?

Such a standard, if found, must evidently be something having a positive value itself, and a value steadily unvarying. But what is meant by this word value ? Value is, in the first place and essentially, a property in material things which fits them to minister to human wants or to satisfy human desires. This, however, is not all. The air we breathe and the water we drink possess such properties, but they are not valuable, because they are the free gifts of nature and within the reach of all. To possess value, a material thing, besides being useful, must be attainable only at some cost ; and all that man in a natural state has to give for an object desired, is his own labor. Human labor is therefore the

element which gives to all wealth its value. The quantity of labor required to produce a thing, measures the value of the thing produced. Consequently, if there be any invariable standard of value possible, it must be found in some manageable form of expression for a unit of human labor.

It is true there have been economists who have imagined that a perfect standard of value can be created by law. This doctrine is maintained in this country, at this time, by men of ability and influence, some among them being conspicuous in the councils of the nation. It has been very often heard upon the floor of Congress. Declarations to this effect in any number might easily be cited from the speeches of many of these ; but the most concise, explicit and dogmatic exposition of the theory which I have encountered occurs in a recently published letter by Mr. Silas M. Stilwell, of New York, who claims to be the author of our present system of National Banks, adopted and carried into effect as he states on his recommendation by Mr. Secretary Chase in 1862. Mr. Stilwell says : "I think our greenback the best standard of value we have had, and it should be our only standard. When gold left us and went like many other cowards to Europe in 1862, we decided and declared by enactment of law that *paper* should be coined to take the place and perform the functions of coined gold. This law made the greenback the *standard* for all values throughout the Union. * * * This standard, like that of weights and measures, is fixed by law and is inflexible. * * * 'There is no variation or shadow of change' in it. It is not, never has been, and cannot be, at a discount or a premium, because it is a legal standard of value. * * * * It has no intrinsic value and but one value. It is made by the will of the people, and is the creature of law. Gold, however, has two values, one intrinsic or metal value, and the other a legal or coin value. In our trade with foreign countries * * * it is sold by weight like other metals ; and therefore, being an article of merchandise, its price is subject to the law of supply and demand. Its intrinsic and exportable value destroys its character as a legal standard of value. * * * There is no safety for us on a gold basis, and there is perfect safety if we make the greenback our sole and exclusive standard of value. Gold metal may go and come, rise

and fall with the current of trade, but our greenback is always the same."

It has often excited my surprise that men who use language like this, have never attempted to explain to themselves how it is that the factitious standard of value which they so eulogize becomes associated with the idea of value at all. If it is to measure values, it must, though valueless itself, have the property of exciting some conception of a definite and constant value in the minds of those who use it. What is that property, or whence comes that conception? Manifestly, in our own case, from the adoption of the word *dollar* as the name of the unit. Dollar excites a definite conception in the minds of the citizens of this country, arising, in the case of the multitude, from an experimental knowledge of the amount of merchandize of this, that, or the other kind which a dollar will purchase ; and in that of a smaller number, by the association of the word with a determinate weight of gold or silver nine-tenths fine. The factitious standard, therefore, rests, for the initial and elementary conception which is necessary to its intelligibility, upon a real standard ; which real standard is in one mind wheat, in another beef, in another cotton, in another pig-iron, and in another gold or silver.

Suppose that, instead of using this word *dollar*, Congress had invented for the name of its standard unit some new term, hitherto unemployed in such relations, and therefore reviving no pre-existing notion of value by association. Since this unit is to be the normal unit by which all values are measured, suppose it to be called a *norm*. Let Congress then put forth a decree in language something like the following :

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled, that there be, and there is hereby, created a standard of value to serve as a unit of account in all business transactions, to be called a *norm* ; with decimal multiples of the same to be styled dekanorm, hektonorm, kilonorm and myrianorm ; and decimal subdivisions to be styled decinorm, centinorm, millinorm and minimonorm.

Be it further enacted that there be issued from the department of the Treasury, to serve the purposes of current money among

the people, printed norms with their multiples and sub-multiples to the amount of—millions, having the form and appearance of ordinary bank-notes, and bearing the legend, "By the authority of the United States of America, ONE NORM, TEN NORMS," &c., &c. And further, "This note is a legal tender for the amount stated on its face, in all transactions of purchase and sale, public or private. It shall be a criminal offence to refuse to receive it as such."

The first question would necessarily be, how much, in any transaction of purchase and sale, should a norm buy? As much as a pound sterling? As much as a dollar? As much as a mark? As much as a franc? As much as a real? Or shall we say it shall buy a bushel of wheat? Or a peck of beans? Or a ton of iron? Some such definition must be given, or the norm is no measure of value. But the moment the definition is given, the norm ceases to be an ideal standard, and becomes merely the representative of a real and variable one.

There can be no true or philosophic standard of value of which the unit is not the representative of a definite amount of that human labor by which value is created. The mode of establishing such a unit is not obvious. The attempt to do it may prove the notion to be impracticable. Moreover, when found, if it is found, this unit must still, in order to be available for practical purposes, be expressed in some visible form of value, some real commodity, such as the money of gold and silver we at present use. For gold and silver will always be the best measure of value, though we may not recognize in them the essential properties of a standard.

We may begin then by saying that those forms of wealth which enter constantly into the world's consumption, are the forms which human labor is most constantly engaged in supplying. The prices borne by such commodities in the world's markets will consequently furnish us the best attainable measure of the value of the labor expended in producing them. And hence a table of such prices for different years, like that above referred to prepared by Mr. Jevons, in which the larger number and the most important of such commodities are represented, will give,

by combining them in proportions corresponding to their several degrees of importance, an approximation at least to the standard required ; and will consequently present a scale in which the inequalities will represent the variations in the value of money. "The idea of a standard of this kind"—I quote from Mr. Horton,—"appears to have first obtained full expression in a reference table of values published by Joseph Lowe, a Scotch merchant, long resident on the continent, in his work 'on the present condition of England' in 1822." Mr. Horton himself, calls the standard thus obtained, *the standard of desiderata*.

Such a standard is of course of no practical usefulness, except in its application to transactions in which an obligation incurred at one time comes to maturity at a later. The obligation is to pay a certain sum of money. In the interval, the intrinsic value of money may have varied—have become greater or less—while the nominal amount of the debt remains the same. If money has increased in value—that is, if its purchasing power has become greater—equity would seem to demand that a smaller amount than that promised should satisfy the debt. If it has become less valuable,—or if its purchasing power has diminished—then the payment of the exact amount promised and no more though it fulfils the legal obligation, does not satisfy the creditor's equitable claim. According to the table of Mr. Jevons, £100 in 1782 had as great a purchasing power as £142, in 1810. A debt of £100 in the first named of these years could therefore only be equitably satisfied in the second by a payment of £142. But again, £142 in 1810 had only as great purchasing power as £89 in 1823. Eighty-nine pounds in 1823, should therefore in equity suffice to pay a debt incurred in 1810, about 60 per cent. greater.

The application of a principle of this kind to the adjustment of deferred obligations would of course be impracticable without the aid of law. It is probable, moreover, that however equitable the plan might appear to a person disinterested, it could not be applied without creating discontent. The creditor, obliged to receive less than the nominal amount promised, in liquidation of his claim, would not be consoled by the information that he had nevertheless received in reality all that was justly due him ; and

the debtor, obliged, in the opposite case, to pay more than the face of his note, would undoubtedly make a loud outcry of remonstrance. In the actual state of things the conditions are the reverse of those just described. When prices rise, the creditor suffers but is usually silent ; when they fall, the debtor feels the pinch and is vociferous in complaint. In fact, of all the financial struggles which have agitated the political world in our country during the last twenty years, there has not been one which has not had its motive in the desire of the debtor class to relieve themselves of their burdens at the expense of their creditors. To this is to be ascribed the opposition to resumption of specie payments, the demand for a legal tender silver unit inferior in value to the established unit of the commercial world, the resistance to the withdrawal of the greenbacks, and the continual demand for more money and more money, when excess of money is one of the chief evils of our present situation.

To increase the volume of money may, by raising prices, be momentarily advantageous to a class, but it is permanently disadvantageous to the whole. When prices have attained an equilibrium on a higher level, the condition of things differs from what it was before only in the fact that the instrument of exchanges has become more cumbrous. If more money were needed at any time for the legitimate operations of commerce, a new supply might facilitate movement, but could not raise prices. When money is supplied which is not needed, it raises prices without adding permanently to the facility of movement. The tendency at the present time toward expansion of the volume of the currency is so decided as to threaten to obstruct commerce in the course of the coming centuries, by the bulk and weight of its machinery. Since early in this century, prices have been steadily rising. Exception of course must be made of brief periods of stagnation, panic, commercial collapses, general loss of confidence, &c., during which, as we have seen in our most recent experience the tide has temporarily turned ; but after every one of these seasons of momentary reaction, the tide has resumed its course, again with greater force than ever. I have no list of the prices of staple articles in this country fifty years ago, but it is within my personal recollection that farm labor at that period, in New

England, was paid only fifty cents a day, or ten dollars a month ; that hotel charges in the city of New York were considered extravagant at two dollars to two and a half dollars per day ; and that Congress Hall at Saratoga Springs entertained its guests at ten dollars per week. Teachers in our High Schools were paid from four to six hundred dollars per annum, and tutors in Yale College the same, while the president of that institution himself was only paid fifteen hundred. The pay of the tutor now is equal to or greater than that of the president then ; and yet I do not know that he is on that account any the better provided with the comforts of life, or any more able to live within his means than he was then. What have we gained then, by doubling the amount *per capita* of money in this country, during this last half century ? Practically and substantially nothing ; nominally, the satisfaction, if it be one, of telling over larger sums of money when we count our incomes—a satisfaction quite counterbalanced by the disagreeable necessity of paying for everything we buy, double prices where we once paid single.

It has been above suggested that the application in practice, of the standard of *desiderata*, would be likely to create discontent, notwithstanding the manifest equity of its principle. A greater difficulty in the way of its application would be in agreeing upon a mode universally satisfactory, of fixing what it shall be. Abstractly, the idea is simple enough ; how to embody it in practical form is the problem. How many commodities, for example, shall enter into the table of reference, and what shall they be ? How shall their relative importance be measured ? Supposing this relative importance to vary from time to time, how shall the disturbance be corrected ? This certainly is supposable, when we consider with what rapid advances great industries like the cotton culture, railroad construction, the chemical arts, &c., have grown up within the present century. And further, supposing these elementary considerations disposed of, who is to construct the table of reference ? It can hardly be believed that different calculators independently working upon a problem so complicated, would reach conclusions entirely identical.

Prof. Newcomb, who has discussed this question in the North American Review for September, 1879, has suggested that the

table of reference should be prepared by a permanent government commission maintained in office for this special purpose ; but it would be a weighty responsibility to place in the hands of two or three men. It would rather seem advisable that there should be concurrent commissions pursuing the same inquiry independently, and serving each as a check upon the deductions of the other.

Supposing however, the difficulties in the way of ascertaining and establishing the standard to be surmounted, the next question which arises is, how shall it be practicably applied ? It has been already hinted that a law which should require or permit the liquidation of a pecuniary obligation by the payment of a larger or a smaller number of the money units current in the country than is expressly stated in the original stipulation, would very probably breed discontent. Prof. Newcomb has moreover pointed out an important consideration affecting this question, in the fact that Banks carrying accounts of long standing—Savings Banks especially—and also Life Insurance Offices, would find a difficulty in keeping their books when the value of the money unit varies from year to year. Their entries must always be so many units, whether the value be greater or less, and the sum of these units can never represent the real total of values received or paid in a series of years. Two modes are suggested by him of overcoming this difficulty. The first is "to issue a paper currency redeemable not in gold dollars of fixed weight, but in such quantities of gold and silver as shall suffice to make the required purchases." As, for all that appears, these notes will still be nominally representative of dollars, though only of bullion and variable dollars and not of coin dollars, the expedient here proposed does not seem to meet the case of bank accounts.

The other plan is to make the coin dollar itself variable, that is to say, to issue a fresh coinage of increased or diminished weight as often as the commission on the standard shall announce that the purchasing power of the coin already current has undergone a change. "There is no difficulty whatever," the professor observes, "in the government changing the amount of gold in the dollar which it issues from week to week or from month to month, so that the purchasing power of the bullion it contains

shall be of the tabular standard. The only difficulty is that the coins already out cannot be immediately altered to correspond to the change." It is true that this is the only difficulty so far as the mint is concerned ; but if we consider the people, it is safe to say that we might as well have no coinage at all. Moreover, neither does this expedient, any more than the other, provide for the case of Life Companies and Banks.

There is, however, a mode of making the standard of desiderata practically available, which is quite practicable, and which appears to me to be wholly unobjectionable. Assume for the standard unit a determinate but arbitrary value. For convenience, let this value be identical with that which belongs to the gold dollar at some specified epoch ; and in order to escape entirely the confusion which must arise from reckoning in dollars while we estimate values in standard units, give to this unit a name. Since it is a standard of value, let it itself be called one *val*. Then when the commission on the standard make their announcements, let them state the value of the *val* in dollars and cents, and the value of the dollar in *vals* and decimals. Every such announcement of the commission should hold good until another is made ; and a new announcement should be made as often as the relation between the *val* and the dollar is observed to have undergone a sensible change.

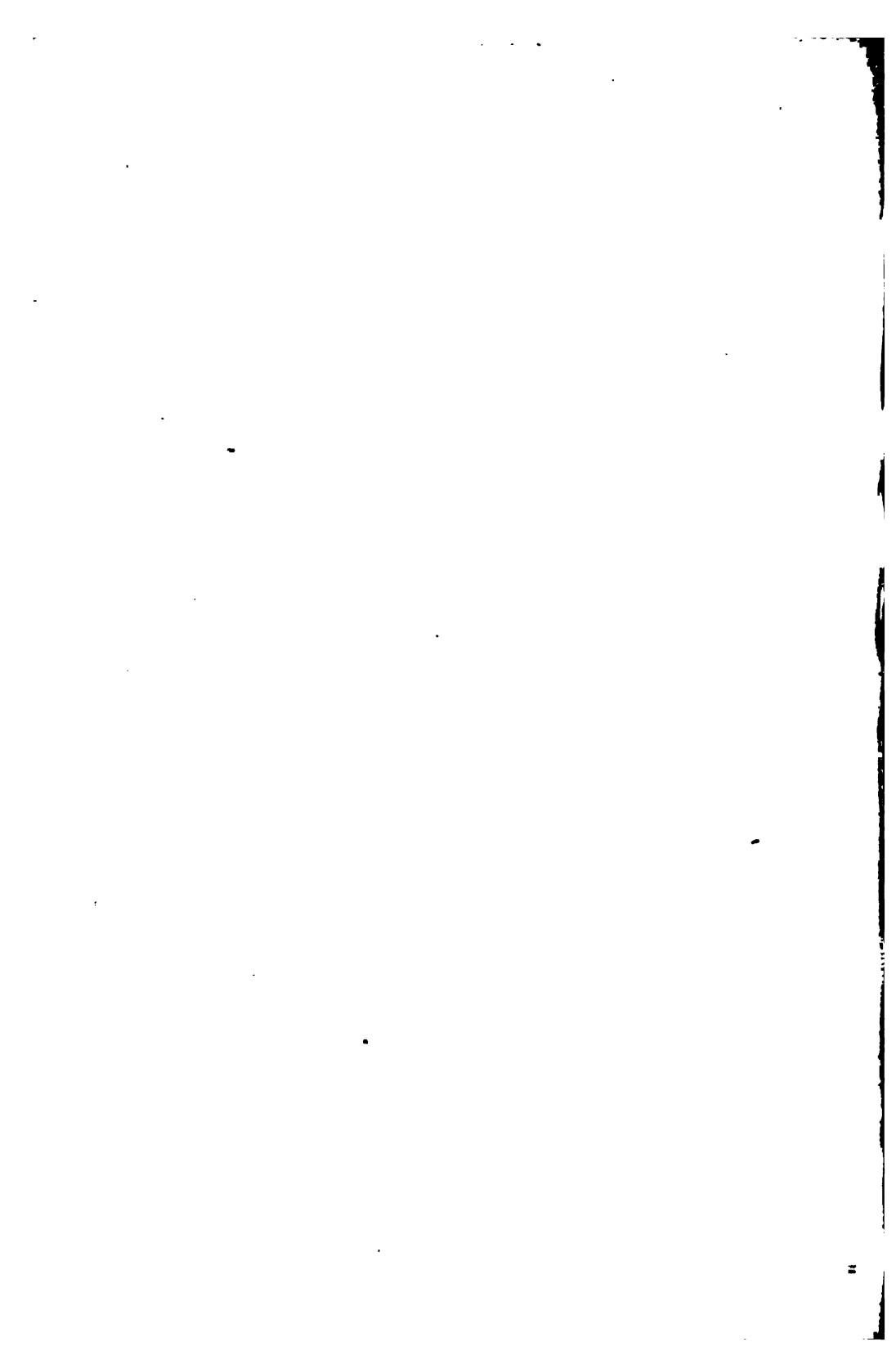
Let the banker keep his accounts in *vals*. In order to do this, he should have on his desk a table, in which any sum in dollars may be read off in *vals* and *vice versa* at any rate of exchange likely to occur. Current money may be dollars as usual. The weight of coins will remain undisturbed. Deposits made in dollars will be credited in *vals* at current rates. Checks drawn in dollars will be paid in dollars and charged in *vals*. Ordinary transactions of purchase and sale completed on the spot, will take place in dollars and cents. But obligations to make payments in the future, such as promissory notes, should be expressed in *vals*. When the obligation matures, payment should be made in the exact number of *vals* promised, and neither party can have ground of dissatisfaction. Whether the amount in dollars would have been less or more will not be a subject of calculation or

curiosity, since both parties will agree that any other result than the one reached would have been inequitable.

The importance of having an invariable standard of value would be inconsiderable, if there were no pecuniary transactions between men involving future payments. In any transactions of purchase and sale completed on the spot, the seller names his price in accordance with his knowledge of the present value of money, and the buyer is guided by a similar knowledge in deciding whether to purchase or to refuse. The increase or diminution of the value of money in the hands of holders takes place so gradually as in general to be quite imperceptible ; or if perceived, is acquiesced in as an accident to which all human possessions are liable, and which probably would have occurred to even a greater degree in the case of property in any other form. But whenever a present value is exchanged for a nominal equivalent in the money of the distant future, it is almost a certainty that, in the steady depreciation of the precious metals which is constantly going on, the creditor must be ultimately the loser. In regard to the rents of real estate, the same thing is true ; so that it has been noticed as a wise provision in the leases by which the landed endowments of the British Universities are held, that the rents are payable in corn and not in money, so that they have thus maintained a nearly unvarying value from century to century.

These considerations show the desirability of an invariable standard of value. In what has gone before, it is made, I think, to appear that the possibility of such a standard is not to be despaired of.





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TWO PAPERS ON ACADEMIC DEGREES

II.

ON THE REGULATION AND CONTROL OF THE DEGREE-CONFERRING POWER.

A PAPER READ BEFORE THE AMERICAN SOCIAL SCIENCE ASSOCIATION, AT THE
ANNUAL MEETING HELD AT SARATOGA IN SEPTEMBER, 1879.

III.

ON THE ORIGIN AND SIGNIFICANCY OF ACADEMIC DEGREES.

BY

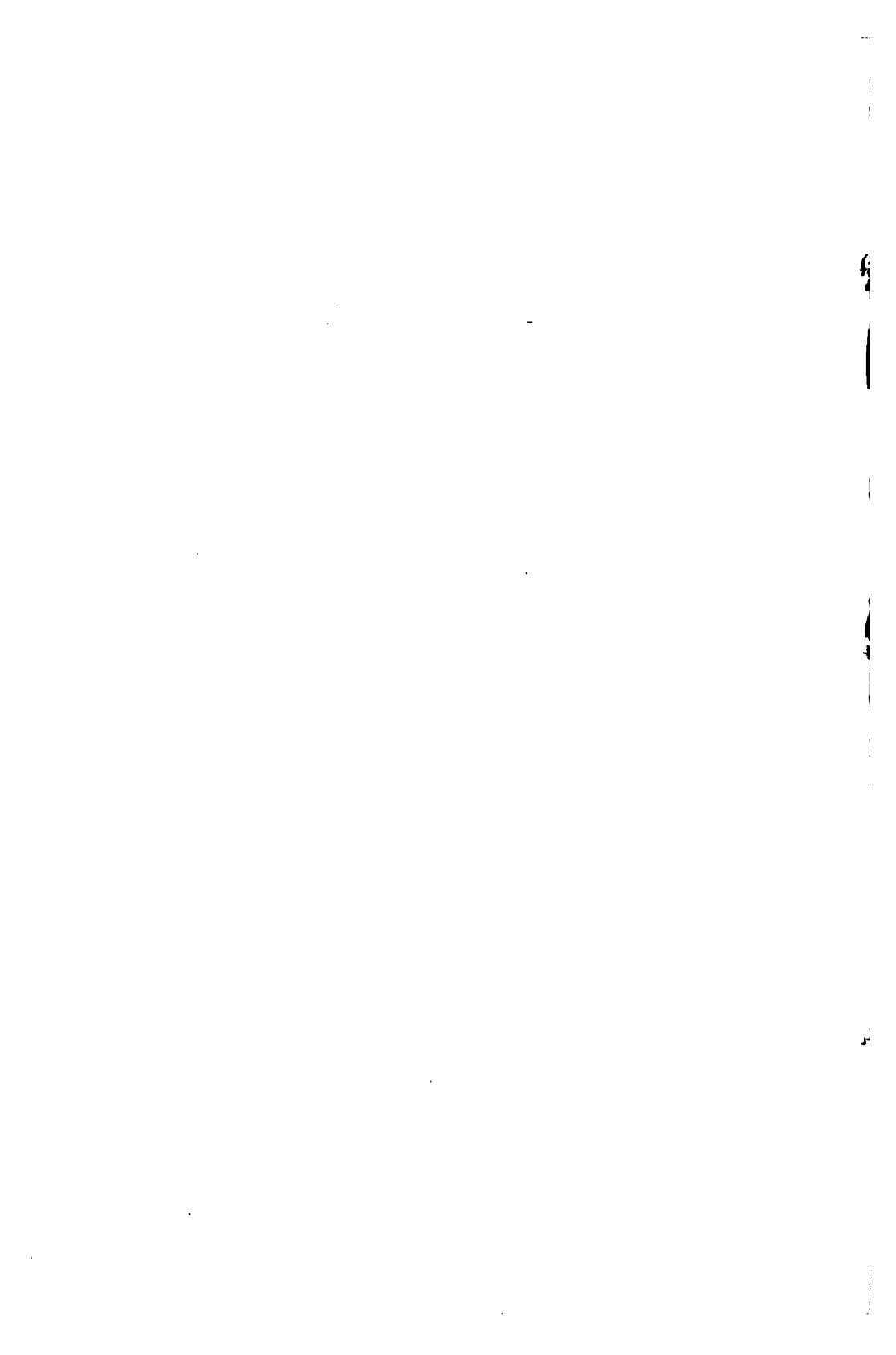
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NEW YORK:

MACGOWAN & SLIPPER, PRINTERS, 30 BEEKMAN ST.

1880.



I.

THE REGULATION AND CONTROL
OF THE
DEGREE-CONFERRING POWER
IN
AMERICAN COLLEGES.

[Read before the American Social Science Association at Saratoga, September 10, 1879.]

Nothing is more laudable than the spirit which aims to improve the higher education of a people, by strengthening the institutions which dispense its benefits, or enlarging the number of individuals who profit by its advantages. In our own country this spirit has been very active from the foundation of our government, and even from the date of the earliest settlements established upon these shores. In recent years it has seemed to be increasingly active; and to an observer judging of results by the large number of educational institutions of nominally the highest order which it has brought into existence within a limited period—say, since the middle of the century—it must appear to have contributed very powerfully to the advancement of the higher education among us. Thoughtful friends of education, however, are beginning to suspect that in this matter zeal has

outrun discretion, and that the rapidly increasing number of our collegiate institutions, instead of affording ground for reasonable gratification as an evidence of growing strength in our educational system, should rather occasion concern, as an indication of weakness already beginning to be prejudicially felt, and likely, unless in some manner checked or corrected, to be still more so in the future.

Before proceeding further, the grounds of this rather paradoxical suspicion ought to be stated. In the first place, then, it may be said that the extraordinary multiplication of institutions exercising the powers of universities which has taken place in this country within the present century, has not been justified by any corresponding educational want antecedently ascertained, nor vindicated by any adequately beneficial results subsequently accomplished. If this proposition be true, it goes without further saying that this great multiplication of costly institutions has been unwise. Whether it is true or not can only be determined by the examination of statistics.

It is now a little more than ten years since it became a matter of interest with myself, for reasons unimportant to the present purpose, to ascertain the number of students in actual attendance at a given time upon all the colleges of the country, referring them, by a careful analysis of the several catalogues, to the states to which they were recorded as respectively belonging. The immediate object was to discover,

if possible, the ratio between the total number of under-graduate students under instruction in the colleges, and the total population of the country; and to compare this general average ratio with the corresponding ratio for the several states separately. Several difficulties, some of them unexpected, attended the inquiry. The first was that of obtaining or forming a correct list of the institutions which the inquiry ought to embrace. This is a difficulty which would strike an intelligent foreigner as very strange. It would certainly be the easiest thing in the world to ascertain the number of universities in actual existence at any time in England, say, or in France, Germany, Austria, or Italy. The very fact that it is not so here, throws a decided light upon the point which it is the object of the present paper to make, viz., the prejudicial effect upon the state of the higher education of our country, of the multiplication of institutions invested by law with university powers.

Many lists of American colleges have been published, all professing to be complete. Such may be found in educational journals, in almanacs, and other statistical publications, in the annual official reports of the Bureau of Education at Washington, and in the decennial returns of the general census of the United States. It is a little remarkable that the sources of information last named are the least to be relied on of all. The causes of the uncertainty in the case are, first, the ephemeral character of many of the institutions chartered as colleges, which after running a brief career of difficult existence,

silently disappear, but leave after them for some years their empty names to figure in the list; and secondly, the fluctuating character of others which, originating as ordinary schools, are seized with the ambition to enrol themselves among the universities, and failing of the anticipated success, relapse to the condition of ordinary schools again. While, however, causes of this kind prevent, and, unless there be instituted some severer control of this matter than at present exists, must always continue to prevent, the satisfactory preparation of a complete list of American colleges, the lists which it is possible to prepare embrace, no doubt, the names of all the institutions important to the present inquiry.

But in endeavoring to gather the statistics of these, a second difficulty is encountered in the fact that many of the number publish no catalogues, reports, or other documents from which information can be derived in regard to their operations. And as a final difficulty, it has happened that direct correspondence, resorted to in the hope of obtaining the desired facts in written communications from the heads of these institutions, has proved to be to a large degree disappointing; the interrogatories in some cases eliciting only partial or imperfect responses, and in others none at all. One hundred and twenty-three institutions took no notice whatever of the letters addressed to them.

According to the list made in 1871, after the most careful efforts continued for about eighteen months to secure accuracy, in the course of which the precaution

had been taken to send printed copies to personal correspondents in the several states, requesting each to verify the titles set down to his own state, to strike out such as might have been erroneously inserted, and to supply omissions, there appeared to be in existence in the year just named, three hundred and six Protestant colleges in the United States, excluding the territories but including the District of Columbia. There were, at the same time, sixty-six collegiate schools under the direction of the Fathers of the Roman Catholic Church; but as these did not in general assume to exercise university powers, and as the number that did so was unknown, they were placed in a separate list. Supposing twenty of them to have been universities, there were, in 1874, three hundred and twenty-six institutions in the United States exercising the right to confer degrees in Arts.

Out of this total, returns were obtained from one hundred and fifty-three. The attendance on these institutions was, in the further progress of the inquiry, distributed under the several heads: preparatory students, scientific students, professional students, students in Arts. The purpose of the inquiry concerned at the time, and concerns at present, only the class last named—students in Arts. These were again distributed to their several states of residence, so far at least as concerned the New England states, New York, New Jersey, and Pennsylvania. In the case of twenty-three out of the one hundred and fifty-three institutions on the list,

scientific, professional, and classical students were given in a common list and could not be distinguished. In the remaining one hundred and thirty, the total number of students in Arts was found to be nine thousand eight hundred and twenty-nine, giving an average of seventy-five each. This list contains all the large colleges of the country. It contains at the same time more than sixty which number fewer than fifty students each, and nearly forty which have not over twenty-five each. For the twenty-three reporting indiscriminately, allow the same average as for the others, viz., seventy-five each; and the total number of students in Arts in all the one hundred and fifty-three colleges will amount to eleven thousand five hundred and fifty-four. Assuming three hundred and twenty-six as the total of all the degree-conferring institutions in the country, there remain one hundred and seventy-three, or more than half, not reporting; and of these one hundred and twenty-three returned no response whatever to written letters of inquiry. It is quite possible that a material proportion of this number may at the time of writing have been non-existent, and the importance of a proportion still larger must be regarded as doubtful. Considering that among those which report, quite a number have fewer than a dozen students in Arts, and six or seven of them not more than five, it is a liberal estimate to allow to all these one hundred and seventy-three universities, so-called, of which we can learn nothing whatever, an average attendance of fifteen students each. This would

give them in all two thousand five hundred and ninety-five, which added to the sum previously ascertained, makes the grand total for the United States, fourteen thousand one hundred and forty-nine. By the census of 1870, the population of the entire country was, in round numbers, thirty-eight millions—giving a ratio of one undergraduate student to two thousand six hundred and fifteen inhabitants.

One word additional seems here to be necessary as to the character of the colleges or universities reporting so feeble an attendance of candidates for degrees in Arts. In several, the number of such candidates is set down as not more than two, and in a few instances it is one only. These numbers are not, however, to be taken as indicating a feeble attendance on the whole. The institutions reporting them are generally, on the other hand, the most numerously attended of any; but their students are principally embraced in the class styled *preparatory*. They are, in fact, institutions of no higher actual grade than the ordinary preparatory school, though the law has clothed them with all the powers of universities.

Now the interest of this result to the purposes of the present inquiry is found in the fact that it is possible to compare it with similar results for earlier periods. In the year 1840, the students of our colleges were almost all students of Arts. In the American Almanac—an annual publication of great value filled with interesting statistics, which first appeared in 1830, and continued to exist for more than thirty years thereafter—there

used to be given, in each succeeding volume, a list of American colleges, with the number of students attending each during the year preceding. As these lists were made up from the publications of the colleges themselves, their errors were necessarily errors of deficiency and not of excess.* Now in 1840 the total number of students in the colleges of the country, as given in the American Almanac for 1841, was nine thousand four hundred and sixteen. The total population of the country for the same year, according to the official returns, was fourteen million five hundred and eighty-two thousand and twenty-nine; giving a ratio of undergraduate students to population of one to fifteen hundred and forty-nine.

In 1860 the total number of undergraduates, according to the same authority, was thirteen thousand six hundred and sixty-one; and the census of that year gives a population of twenty-seven million four hundred and ninety thousand two hundred and sixty-six; from which we derive a ratio between undergraduates and population of one to two thousand and twelve.

By comparing these results it will be seen that the number of undergraduate students in Arts in the United States, between the years 1840 and 1870, while absolutely increasing, continued relatively to the total population of the country steadily to diminish, the successive ratios being :

In 1840.....	1 to 1,549
In 1860.....	1 to 2,012
In 1870.....	1 to 2,615

* The catalogues of colleges are usually published early in the year, and fail to contain the entire number of matriculates.

For the present year, or for any year more recent than 1870, I am unable to give the total number of undergraduate students; so that it is not in my power to extend the comparison farther.

For the purposes I had in view in 1870, I should have extended it perhaps indefinitely; but I was induced to abandon the work, which I found to be exceedingly laborious and time-consuming, in consequence of the fact that the Bureau of Education at Washington, with opportunities much better than any individual could command, took up just at that time apparently a similar investigation. But while the Bureau has carefully brought together and published at intervals the numbers of students in attendance upon the colleges of the country, it has neglected to make the important distinction between professional students, students of Arts, and students of sciences, so that the numbers furnished are useless to the present inquiry.

If we assume that the progress which took place from 1840 to 1860 has been since going on at a similar rate, it is probable that the ratio between the number of undergraduate students in our colleges and the total population of the country is at present not far from one to three thousand; which, estimating the present population to be about forty-five millions, would give fifteen thousand as the total number of undergraduates in the schools of Arts of the whole country at this time. Supposing, on the other hand, that the ratio has remained unchanged since 1870, we shall have a number of under-

graduates of about seventeen thousand. The truth may possibly lie between these numbers.

In 1830 the corresponding total was about eight thousand, and the number of colleges was then not far from one hundred and twenty. According to Professor Nightingale, who has given us the latest enumeration, this number is now four hundred and twenty-five, or, including Protestant colleges only, three hundred and fifty-five. The population of this country in 1830 was twelve millions. It is now not less than forty-five millions. The population has increased fourfold, the number of colleges threefold, and the number of students twofold.

If we divide the total attendance for each of these epochs by the total number of colleges, we shall find the average attendance to have been, in 1830, sixty-seven; in 1870, forty-four, and in 1879 about forty.

The point, therefore, may be regarded as pretty well established, that the excessive multiplication of colleges in the United States during the last half century has not been owing to the existence of any educational want previously ascertained or subsequently proved to exist. Had this been true, the increase in the total number of undergraduate students would have been proportionally in excess of the increase of population, instead of being far behind it, as it has been in fact; and the average attendance on the colleges would have been greater in the later years than in the earlier, instead of being materially less, as it is in fact.

The conclusions arrived at from this examination of the general educational statistics of the country are more than confirmed by comparing them with those of particular states.

It has been mentioned above that, in the analysis of the returns from one hundred and fifty-three colleges made in 1870, the students were referred to the states to which they severally belonged. Similar records for earlier years were not easily obtainable; but fortunately it was found that for the states of New England an analysis of the same kind had been made and published of the catalogues of the New England colleges themselves for three previous epochs, viz., 1827, 1839, and 1856; the first two having appeared in the *American Quarterly Register*, a publication now extinct; and the last, in Henry Barnard's *Journal of Education*. The second of these statements embraced, besides the New England colleges, eleven others, few of which, however, seemed to have attracted students from New England. To the first and third it was found possible to add the numbers for Union College, the only collegiate institution out of New England having an attendance from the New England states worth considering. Of course, if there were errors in the totals thus obtained, they were errors of deficiency, inasmuch as the students from New England who may have resorted to colleges not in the lists, escaped the count. For the year 1870, however, the enumeration was probably exhaustive, it being hardly supposable that any New England student was in attend-

ance on any of the generally obscure and always remote colleges not in the list of one hundred and fifty-three made in that year. The population of the states having been authentically ascertained for the several dates considered, the ratios obtained would be likely to present results more favorable for the last than for the earlier epochs; a circumstance tending to emphasize rather than invalidate the conclusions drawn from the comparison.

The first of these inferences was one not exactly looked for; and though of no material importance to the present purpose, is of sufficient interest to deserve mention. It was that, during the earliest of the intervals between the successive enumerations, the number of students materially increased, both absolutely and relatively to the population. This was observable not only in New England as a whole, but in every individual state except Maine—a state then principally occupied by a pioneer population; while, from the second epoch onward, the absolute increase during each successive interval was slight, and relatively, a decided *decrease* took the place of the previous increase. The point of time here indicated is precisely that at which the popular demand for a scientific instead of a classical education began to make itself felt.

Another inference from the same numbers was in accordance with expectation. It was the fact that the proportion of students in Arts sent to the colleges by New England is greater than the corresponding proportion as ascertained for the whole country. In explanation of

this, I may be permitted to quote from the document in which the statement originally appeared, these few words:

"New England is precisely the portion of the Union in which we should expect to see the ancient and honored system of classical culture most firmly maintaining its ground. It embraces within its limits the college earliest founded in America—it might almost be said the earliest two, since the College of William and Mary preceded the second by but a few years. It was peopled mainly by colonists from England proper, a band of devotees with whom religion was everything, and with whom education was almost religion. It has always been regarded not only as the cradle, but as, in a certain sense, the lasting home of American intellectual culture; and in the growth of our native literature it has contributed a share which, whether measured by volume or by character, is largely in excess of the proportion its population has borne numerically to that of the nation of which it forms a part. The law of movement which we may here detect in the higher education, cannot therefore, to say the least, be less favorable to literary and classical culture than that which must prevail over the country generally."

The following numbers express the ratio of students to population in New England generally for the several epochs named.

1827.	1839.	1856.	1870.
1 : 1,513	1 : 1,294	1 : 1,689	1 : 1,927

At present the ratio is probably about 1 : 2,200.

In examining the statistics of the particular colleges of New England, some curious facts appear which furnish additional corroboration of the point I am endeavoring to make.

There were, in 1870, fifteen colleges in New England, of which thirteen had been in existence long enough to cover more than the two epochs we have just been considering. Out of these thirteen there were only six of which the total attendance was not at that time smaller than it had been at some period previous. Seven had apparently lost ground—some very decidedly. Of the same thirteen there were only four in which the attendance from the state in which the college is situated was not less than it had been thirty years earlier. Three of the six states of New England sent severally, in 1870, fewer students to all the colleges of the same state unitedly, than they had sent in 1839.

These facts furnish cumulative evidence of the truth of the proposition that the multiplication of colleges in the country for the last half century has been going on not only in the absence of any ascertained necessity, but in the face of the evidence that the supply is already excessive.

It may be asked, however, admitting all this to be true, of what concern to us is the existence of this multitude of superfluous collegiate institutions, and what harm can they do except to themselves or their founders and managers, to whom they often bring only disap-

pointment and loss? Well, it would not concern us at all if, by the careless system of legislation on this subject prevalent in this country, they were not made the repositories of powers, and allowed the free exercise of functions, which, in other ages and in other lands, have been scrupulously reserved to be intrusted only to the representatives and organs of the highest erudition. Deprived of the degree-conferring power they can do no harm, and might perhaps accomplish some good. France, Germany, Italy, and other countries of continental Europe are full of *lycées*, *gymnasia*, *realschulen*, and colleges, where instruction in all branches of letters and science is as extensive as it is in the average American college, and generally a great deal more thorough, but which are without power to confer degrees.* If their proficients aim to secure academic honors, they must resort to the proper universities—stitutions which in the educational field stand immeasurably above them. The British colleges cannot confer degrees, not even those which belong to and form a part of the great universities of Oxford and Cambridge themselves. For the last several years a persistent effort has been made by the friends of education in Manchester to secure for Owens College, an institution of high character in that city, which ranks with many of those connected with the existing universities, a grant of university powers. Hitherto parliament has steadily refused; and yet all

* The French *lycées* and colleges confer the degree of Bachelor of Letters, or Bachelor of Science; but they cannot confer a degree of Master or Doctor. The doctorate of philosophy is the university degree, and this only is held in esteem.

England, with a population of twenty-three millions, has but four universities. The State of Ohio, on the other hand, with only three millions, has thirty-seven.*

Let us extend the comparison a little further. All France, with a population of thirty-six millions, has but fifteen universities, which, moreover, are actually branches of a single one. All Germany, with a population of forty-two millions, has but twenty-two universities, or one to two millions of inhabitants. All Europe, with a population of three hundred millions, has but one hundred and one universities, or one to three millions. Our own country, with a population of forty-five millions, has four hundred and twenty-five universities, which gives us one university to every one hundred thousand of our people. Everywhere but in the United States it has been the policy of governments to proceed with great caution in their concessions of the degree-conferring power; and not to concede such power at all unless accompanied with ample provision to sustain it respectably, or unless satisfactorily assured that such provision exists. For a university, in a proper sense of the word, is a costly establishment. It cannot be created by a mere act of legislature. A fiat university is worth no more than a fiat dollar. We have some universities in this country whose resources are in some degree correspondent to their responsibilities; but we have not one whose power of usefulness is not constantly held in

* Since this paper was read, Owens College has succeeded in securing a university charter.

check by insufficiency of means. I do not know now what may be exactly the annual revenue of Harvard University, but I know that it is large; and I believe that if it were doubled, the beneficial influence which that institution is exerting directly and indirectly to improve the higher education of the country, would be increased fourfold. On the other hand, if that institution should be broken up, and if the funds belonging to it should be divided among some dozen or twenty new institutions erected to replace it, though the list of American universities would receive an important accession, unappreciable injury would be inflicted upon the cause which universities are designed to promote. Now, in erecting new colleges without necessity, we are not, it is true, breaking up old ones; but we are doing what is next to that, obstructing their natural growth in strength and usefulness, by turning the flow of public munificence, which would otherwise be concentrated on them, into a thousand minute and devious channels in which it runs mainly to waste.

But it is not the waste of means which is the only or the principal evil resulting to the country from the undue multiplication of degree-conferring institutions among us; it is the discredit into which the diploma of the average American university is falling, from the absence in many instances, perhaps in the majority, of any guaranty, either in the celebrity of the names affixed to it, or in the high repute of the institution whose seal it bears, that it is what it purports to be--the evidence of

high culture and genuine scholarship in its possessor. This is by no means an imaginary evil. It is a notorious fact that a degree in Arts no longer commands the consideration which used to be accorded to it, unless indeed it is known to have proceeded from some well-known institution of undoubted character. This matter has been a subject of frequent comment in the public journals, and of discussion in educational conventions. It is now seven or eight years since, in view of this unfortunate state of things, a resolution was adopted in the University Convocation of the State of New York, held at Albany under the auspices of the Regents of the University, recommending to all college graduates that, in writing after their names the letters significant of their academic distinctions, they should add the names of the institutions conferring them. But while this is an expedient which would serve to rescue the diplomas of known and honored institutions from the suspicion of doubtful value with which the prevailing anonymous covers all degrees at present, it would emphasize more strongly this suspicion for the rest; and so would only expose without curing the unsubstantial character of our academical distinctions in general.

This consideration has led me to examine the question whether it is not possible legally to subject the degree-conferring power to such regulation and control as to secure for every degree conferred a voucher of recognized authority, apart from and independent of that of the institution conferring it. I find in the state of New

York a condition of things which suggests the possibility of such a control. We have here a body corporate, entitled "The Regents of the University of the State of New York." This body is empowered by law to charter colleges and to exercise supervision over them—a right which it exercises actually little more than in name. Singularly enough, while this body is authorized to confer degrees in law, in medicine, and in theology, it is prohibited from conferring degrees in Arts. My plan would be, if realized in its full extent, to give to the Regents this prohibited power, to require them to appoint a permanent board of examiners of high character and unquestioned learning, by whom all candidates for degrees in Arts in any of the colleges of the state should be subjected to examination, and without whose favorable report no candidate should receive a degree. I would have all degrees then to be issued in the name of the University of the State of New York, placing the colleges in the same relation to the Regents as that which the colleges of Oxford and Cambridge bear to the authorities of those British universities. But inasmuch as the realization of this plan in full would require the relinquishment by the already existing colleges of their right to grant degrees in their own names, I would not insist on that particular feature. The essential point would be that the university should relieve the colleges of the duty of examining aspirants—a matter in respect to which objection from the colleges is hardly to be anticipated.

Now, because I propose this system for New York, it is not because I feel that New York has especial need of it as a remedy for the evil of which I have been speaking. In that view its adoption in our state may be regarded as matter of indifference. I have suggested its adoption here, because the example would be, as I should hope, powerfully influential; and because we have here the machinery necessary to its operation ready made to our hands. But it would be of no avail to adopt it here only. To accomplish the object aimed at, it would be indispensable to make the system universal. Such, therefore, has been my idea, and as such I ventured to present it before the Regents of the University themselves in a recent meeting of the convocation, in words which I will take the liberty here to quote:

“Let the state reserve to itself the exclusive right of granting academic degrees. So far as this right is concerned I would, if it were possible, make *tabula rasa* of the entire existing system; that is to say, without interfering in the least with the scholastic operations of existing colleges, I would withdraw from all of them the degree-giving power, and place them all upon the same footing as the colleges of Oxford and Cambridge. But, inasmuch as that would be an infringement of vested rights, it would be impracticable to do it unless the power were voluntarily relinquished. Leave, then, the existing colleges alone, but allow no more to be created with this power.

“Let each state, then, establish for itself a state uni-

versity, charged with no duty of teaching, but empowered to charter teaching colleges, at its discretion, in all the faculties; to prescribe general rules for the conduct of these colleges, and to exercise supervision over them; to examine all candidates for admission to them, and all proficients who may be presented by them for degrees; and, finally, to confer these degrees by diploma under the seal of the university, setting forth in such diploma the name of the college presenting the candidate. As it respects existing colleges, though they would retain the right to issue diplomas in their own names and under their own seals, I would still extend to them the same system of examinations, relieving them from the task of testing the qualifications of candidates either for admission or for graduation.

"The state university, therefore, as I conceive it, would be a body possessing powers considerably resembling those of the University of London; yet not altogether, for though, like that university, it would examine for degrees, it would not examine all comers indiscriminately, but only those presented by the colleges. It would also be competent to exercise a jurisdiction, and would be charged with responsibilities, which do not belong to that at all.

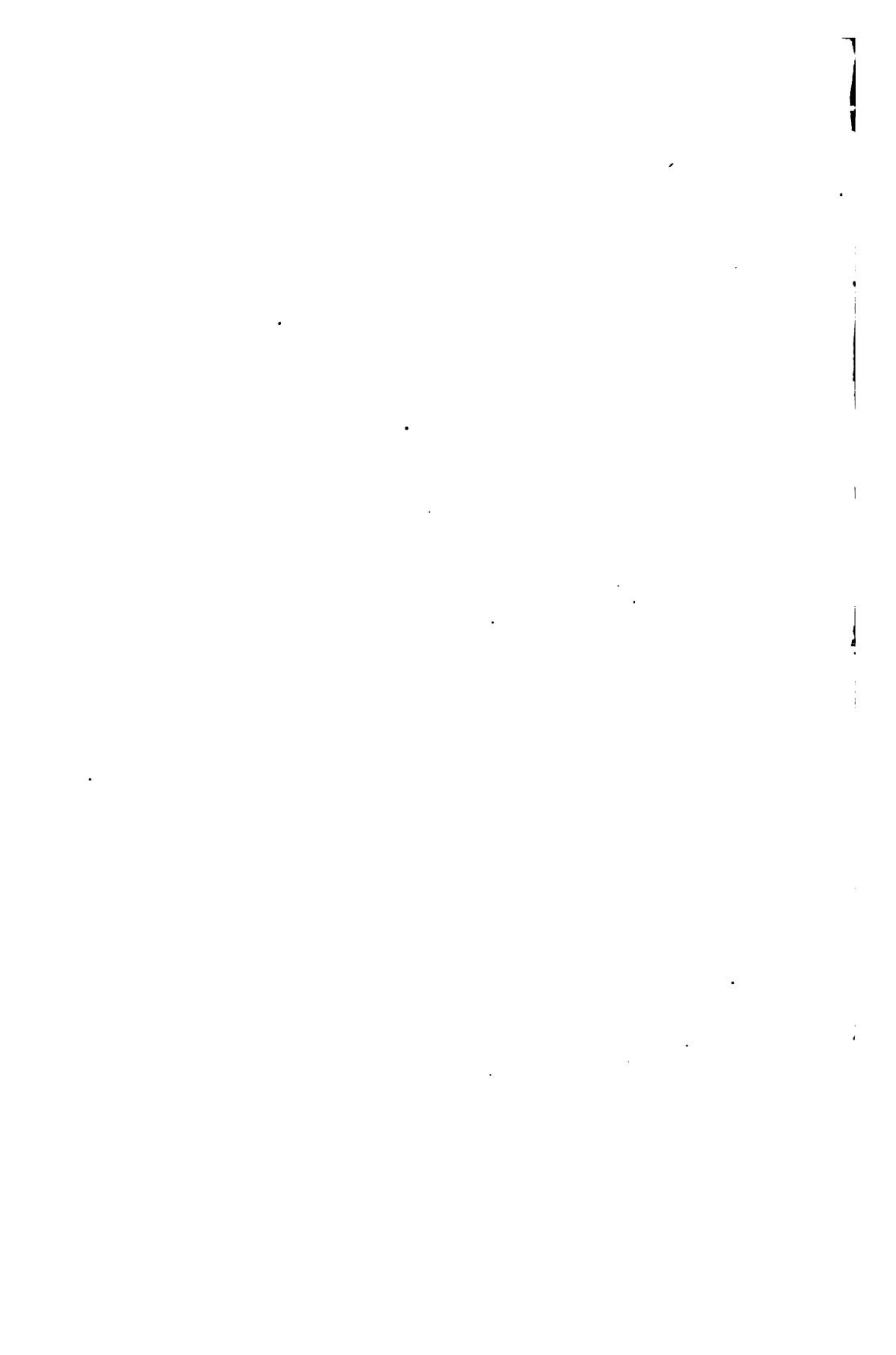
"Were this scheme to be adopted in every state, although it might not, except by voluntary surrender, diminish the number of our degree-conferring institutions, it would, nevertheless, for all practical purposes, reduce this number to thirty-eight. Furthermore, as

each state university would necessarily be compelled to employ a permanent board of professional examiners, who, from the dignity and responsibility of their office, would naturally be, like those of the University of London, men of profound learning and usually men of celebrity, its diplomas would all carry with them a stamp of authority which is sadly wanting to many of those now issued.

"Under this system, the sound colleges would be distinguished by the uniformity with which their candidates would secure approval; the feeble, unsound, or specious would be compelled to strengthen and reform themselves, or would be crowded out of the competition."

Having presented my scheme, I will not further encroach upon the time of this meeting by enlarging upon it. I will merely mention, in conclusion, a suggestion in regard to it which I have received from our honored President, that inasmuch as its success, if achieved, could only be a work of time, and its final accomplishment might be retarded by opposition, something in the same direction might possibly be effected independently of legislation, by the voluntary association and co-operation of colleges themselves. Such a plan would be entirely practicable; and if in an association formed for the purpose of instituting a common system of examinations, the adhesion of the strong colleges of the country could be secured, it could not but prove successful. Unfortunately the strong colleges do not

need the system. On the other hand, their interest in the general cause of educational advancement might induce them to lend it their countenance and to support it by their co-operation. In this case, an association formed at first by a few could hardly fail to attract others into its circle, until every institution of character would desire to be included in it.



II.

THE ORIGIN AND SIGNIFICANCY
OR
ACADEMIC DEGREES.

Systematic education in Europe may be said to have commenced ten centuries ago, in the Schools of Charlemagne. In these schools the so-called *Liberal Arts* received the somewhat inappropriate designation by which they continue still to be known. Out of these same schools were in some instances developed, or to them in others succeeded, the institutions of higher learning distinguished by the no less inappropriate term, *university*. This term, in fact, is something more than merely inappropriate—it is misleading, since it was chosen without any reference whatever to the extent or comprehensiveness of the course of instruction given in these institutions. The teaching of the early universities was by no means universal, even as respects that limited range of knowledge which constituted the *omne scibile* of what we are accustomed to call the dark ages. That it is not so in the corresponding institutions of our own country and time, it is quite superfluous to remark.

Most of the early universities were constituted origi-

nally in but one faculty, and that was not always the faculty of Arts. Few, at any time, comprehended all the four faculties which were supposed to fill up the entire round of human learning. Sir William Hamilton tells us that the term university was intended to denote the entire personality of the institution, and not at all the circle of its teaching. It was *universitas magistrorum et scholarium*, and not *universitas literarum et scientiarum*. But while it is profitless to endeavor to define the educational province of the early university by etymological deductions, there was one especial and explicit function which it was legally empowered to fulfil, and which belonged to it exclusively—that of conferring upon individuals trained by itself, and ascertained to be proficient, the right to give instruction to others, and generally to student members of the same body, in the Liberal Arts. This right was legally vested in the Chancellor of the University alone. Practically it was exercised on the advice of the regent body made up of the actual teachers. It was conveyed by the public oral announcement of the Chancellor, accompanied by a written certificate of license, the receipt of which constituted the recipient a regent himself. No distinctive title attached to the distinction so conferred. The newly promoted aspirant was called a *licentiate* in reference to the power bestowed on him, or a *doctor* in reference to the function he was called to fulfil, or a *master* in reference to the school or the class over which he was to preside or rule.

During the earlier two or three centuries, it would appear that the proficient was advanced at a single step from the rank of a learner to that of a doctor and regent. Some time in the thirteenth century the practice seems to have been introduced of conceding to the aspirant, at first, for a limited probationary period, only the right of teaching under the supervision and direction of a regent teacher; after which, on evidence of proficiency, the novice was advanced to the dignity of a regent himself. During this preliminary state, the probationer was called a *bachelor*, a term of which the origin is not positively settled; and which was probably in use earlier than the date just named, as an equivalent of doctor or licentiate.

To the right to teach conveyed by the license, was attached the positive duty of teaching in the institution conferring it. It was therefore no part of the ambition of the students in general who resorted to those early universities, to secure a privilege which had no importance to them, especially when attended with a burden which they had no disposition to bear. The number of the licentiates therefore annually made was exceedingly insignificant when compared with that of the entire student body. Of the latter, the stories that are told seem now to us incredible. If we may believe them, Paris, Oxford, and Cambridge alone, about the year 1250, had gathered together crowds which, unitedly, would hardly fall short of one hundred thousand. These eager seekers after knowledge were drawn not merely from the adjacent districts, but from the remotest parts of the con-

tinent of Europe; so that instead of blending together in a homogeneous whole, they were organized and classified by nations.

Of the period when the affluence of students in the old universities was greatest, there have not come down to us records, or at least no records have been published, which may enable us to ascertain how large a number of licentiates were created annually. But, three centuries later, when the attendance at Oxford and Cambridge had diminished to about five thousand each, we may gather from the tables furnished by Huber for those institutions, that the number of Bachelors of Arts made annually bore to the whole student body a ratio of only about one to three hundred; and the number of Masters, to the same total, a ratio of only a little more than one to five hundred. These deductions are derived from the average of the sixty years commencing about the year 1500.

It does not clearly appear at what time the term *degree* was first introduced to denote investment with the academic license to teach. As the word signifies rank, and implies the existence of more than one order of dignity, it was probably not employed until the distinction was established between the grade of bachelor and that of master. Not to secure a degree at the close of a course of university instruction at the present time and in this country is, in popular estimation, to have made an ignominious failure. Yet it is quite inconceivable that the insignificance of the number of gradu-

ates made at the British universities in the sixteenth century, could have been due to such a cause as the disgraceful lack of proficiency on the part of so enormously disproportionate a majority of the students as the records show to have retired undecorated. The natural inference is that degrees were not then sought as honors. They were sought for the privilege they conveyed. But no one desired the privilege who was not in position to use it. This is not to say that degrees were therefore not honorable. They were honorable precisely as a professorship is honorable now; but not even a scholar seeks a professor's chair at present which his purposes in life will not permit him to occupy.

From the numbers above derived from Huber, it will easily be perceived that, so long as the attendance upon the British universities continued to be numbered by thousands, the few graduates annually made were not in excess of the demand to supply losses, from retirement or other natural causes, in the teaching body. With the gradual diminution in the number of students, the supply of teachers became redundant. Some who had attained the dignity of masters were relieved of the accompanying duty, or were held for the sake of form to only a brief term of service. Bachelors who aspired to be masters were permitted to reside at the university without teaching, and finally residence even was dispensed with. The result was a contradiction of the ordinary law of supply and demand. It happened that as the need for teachers diminished, the number of

teachers annually made increased. The fact is easy of explanation. To the scholarly mind nothing can be more fascinating than academic rank, unaccompanied by the necessity of academic drudgery. And all distinctions are gratifying which do not interfere with personal freedom. It may even be said that a degree came to be prized more, in proportion as, in its bestowal, the purpose for which it was originally created became less conspicuous. In dissociating from it the idea of service, it became more exclusively a mark of honorable distinction. The records of Huber just referred to afford very manifest evidence of the truth of this remark. One century later than the date corresponding to the citations above given, we find that the annual number of graduates made at Oxford and Cambridge had increased no less than tenfold; while the total number of undergraduates in attendance had been diminished probably at least one-half.

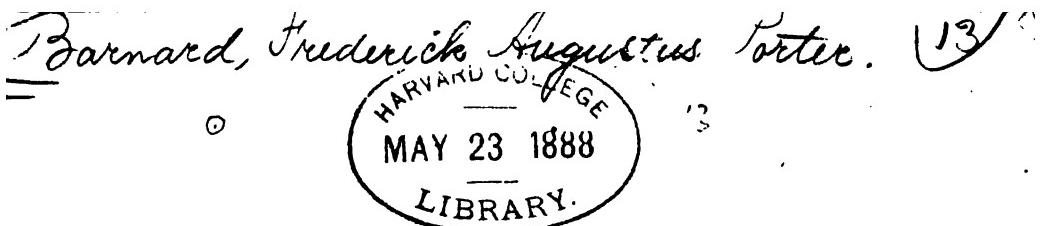
For the last two or three centuries, therefore, the academic degree has been merely a titular distinction. And as, at the time when it began to take on this character, learning even of a rudimentary character was less general in Great Britain and on the Continent of Europe than it is at present, the degree was among the most enviable of distinctions. It was so because, in the first place, it implied in the holder a superiority of attainment and of intellectual culture only to be secured through persevering and meritorious effort; and because, secondly, the sources from which it was derived

were universally reverenced as fountains of the highest erudition, and were accessible only to the privileged few. Nor in our own time is the esteem in which academic honors are held in the Old World, materially less than that which was conceded to them two centuries ago. For though universities are no longer, as in the middle ages, in the exclusive possession of all the avenues to superior learning, they furnish opportunities and advantages for such acquisitions with which no others can compare, and they are instrumentalities expressly created to facilitate and accomplish this end. Nor is it so much as an attestation of high attainment in the possessor that a degree bestowed by an European university is at present esteemed to be honorable—for in this sense the evidence may not be always conclusive, and in the present age an amount of intelligence which in the seventeenth century might have been esteemed as phenomenal may pass for comparatively little—it is not this so much that gives it its value, as it is the identification of the individual with the institution by which the degree is bestowed, and his participation with it, as a member and joint partner, in all its venerable glories. As the scion of a noble house, irrespective of any personal merit of his own, is regarded with a deference involuntarily yielded in honor of his illustrious race, so the university graduate enjoys, from the reflected celebrity of his *alma mater*, a consideration quite distinct from that which he might have individually won.

Very much of this peculiar value of the degree, of course, disappears, when the degree-conferring power has

no such ancient and honorable history behind it. And whatever value of any kind may still adhere to it as the index of superiority of culture, must soon be equally lost if no care is exercised to maintain this power in the hands of the limited number of men who only in the nature of things are properly entitled to exercise it. The present tendency is to multiply degree-conferring bodies without limit, and without the slightest regard to quality. Matters need only drift a little longer in this direction in order that academic honors may become as cheap as militia commissions in the days before the war; and the title of Bachelor or Master of Arts may fall into a contempt as complete as that of consul in Rome, when a vicious and brutal emperor bestowed that once enviable dignity upon his horse.





[From the Proceedings of the AMERICAN METROLOGICAL SOCIETY, for May, 1881.]

STANDARD TIME.

Dr. Barnard laid before the Society a printed paper on Standard Time, with the following explanation :

At the meeting of the British Association for the Promotion of Social Science, held at Manchester, in September, 1866, a committee was appointed, on motion of David Dudley Field, Esq., of New York, for the appointment of a committee to prepare and report to the Association the outlines of a Code of International Law, with the view of having a complete code formed, after revision and amendment, to be subsequently presented to the attention of governments, with the hope that it might sooner or later receive their sanction. Mr. Field was made the chairman of the committee, and the work was distributed among the several members. A good deal of time having afterwards elapsed without bringing with it much progress, Mr. Field, in 1871, completed a draft of his own, which was printed and presented to the association (which had since assumed an international character, and become known as the International Association for the Reform and Codification of the Laws of Nations) in the following year.

In the preparation of these draft outlines, Mr. Field did me the honor to request that I should contribute the titles, *Money, Weights and Measures, Longitude and Time, and Sea Signals*.

The title *Longitude and Time*, as prepared for this work, anticipates the more recent recommendation of the Time Committee of our Society in regard to a prime meridian; for though it recommends for the prime meridian, the meridian of Greenwich, this is for astronomical purposes only; while for civil time, its recommendation is, as is our more recent one, that the hour of midnight on the meridian one hundred and eighty degrees distant from Greenwich shall mark the change of count

in the monthly calendar, which is at present the beginning of the astronomical day for Greenwich itself.

As this paper is the first in which this proposition has been made, it has a proper place in the history of this subject, and is likely to have sufficient interest for the members of the Society to justify its republication in our Proceedings. Mr. Field has kindly given his consent to such republication, and I submit a copy for this purpose accordingly.

TITLE XXII.—LONGITUDE AND TIME.

[Prepared for Field's Draft Outlines of an International Code, by F. A. P. BARNARD.]

The use of geographical co-ordinates, for the purpose of fixing the positions of places upon the earth's surface, was first suggested by Hipparchus.* The method seems to have been first practically applied by Marinus of Tyre, a geographer known to us only by the citations of his work in Ptolemy. Claudius Ptolemy, of Alexandria, who flourished toward the middle of the second century of our era, presented, in his treatise on geography, a pretty full synopsis of the knowledge of his time in regard to this subject, many of his pages consisting simply of dry details of the latitudes and longitudes of particular places. For latitudes, the equator furnishes a natural circle of reference. For longitudes, any meridian may serve as a zero; but in the early history of geographical science, it was thought advisable, and it then seemed possible, to choose such a prime meridian as should allow all longitudes to be measured in a common direction. In the time of Ptolemy, the limit of the habitable world toward the west was supposed to lie in the group of islands called the Fortunate Islands, now known as the Canaries. Through this group he accordingly supposed his first meridian to pass: but its position was apparently defined only by its presumed distance from Alexandria, so that the meridian of Alexandria must be regarded as his actual meridian of reference.

As, in the progress of centuries, geographical knowledge extended, and new geographers arose, new meridians were adopted. In the construction of maps and charts, it was natural that authors should pass their meridians of reference through well-known places: as, for instance, the capitals, or chief towns of their own countries. The progress of astronomy contributed moreover to the multiplication of meridians of reference, since convenience would suggest that the tables founded on actual observation should be conformed to the local time at the observatory.

* Montucla, *Histoire des Mathématiques*, T. I., P. I., L. 4; Delambre Hist. Astr. Ancienne, T. II., ch. 15.

During what are commonly called the dark ages in Europe, astronomy was cultivated chiefly by the Arabians,* whose tables, some of them, are said to have possessed much merit. The first European astronomical tables of importance were those which were prepared in the latter part of the thirteenth century, (published, however, only in 1483,) under the auspices of Alphonso X., King of Castile, and which are known by his name.† These were adapted to the meridian of Toledo. The tables of Copernicus, in the sixteenth century, were conformed to the meridian of Cracow. These were, somewhat later, improved and republished by Reinhold, under the name of the Prutenic or Prussian Tables. The Alphonsine, Copernican and Prutenic tables were all founded upon ancient and imperfect observations. They were followed by a variety of others, mostly deduced from them ; but the whole of these were superseded, early in the seventeenth century, by the publication of the famous tables called the Rudolphine Tables, in which were presented the results of the long and laborious observations of Tycho Brahe, reduced and arranged by the celebrated Kepler. The meridian of these tables was that of Uranibourg, Brahe's observatory, in the island of Huena. Simultaneously with these, and later, appeared the tables of Longomontanus, (1624,) and of Reinhart, (1630,) referred to the meridian of Copenhagen ; of Lansberg, (1632,) referred to the meridian of Goes ; of Reinert, (1639,) meridian of Pisa ; of Goldmeyer, (1639,) meridian of Nuremberg ; of Bullialdus, (1645,) meridian of Uranibourg ; of John Newton, (1657,) meridian of London ; of Count de Pagan, (1657,) meridian of Paris ; of Street, (1661,) meridian of London ; of Lever, (1660,) meridian of Rome ; of Wing, (1669,) meridian of London ; of De la Hire, (1687,) meridian of Paris ; of Halley, (1749,) meridian of Greenwich ; of Lacaille, (1758,) and of Lalande, (1759,) meridian of Paris ; and many others.

Besides the general tables here referred to, there were published in many places, from a very early period, ephemerides of the movements of the principal heavenly bodies. Montucla‡ enumerates fifty or more publications of this kind, referred to a variety of meridians, as Vienna, Ulm, Berlin, Nuremberg, Venice, Bologna, Augsburg, Rouen, Dantzig, Paris, London, etc. These publications were generally intended to cover a series of years, and were not periodical. Others, however, were issued annually, the earliest of which, computed for the meridian of Paris, appeared in Paris in 1678, under the name of the "*Connaissance des Temps*." This has since been uninterruptedly continued to the present time. A similar publication, which also still continues, was commenced in Berlin, in 1766, under the title of the "*Astronomisches Jahrbuch*." Another annual of the same character appeared in Vienna, in 1757, and still another, in Milan, 1775. The annual ephemeris, however, which has had the widest circulation, and has most largely contributed to the uses of navigation, has been the "*British Nautical Almanac*,"

* Ency. Brit., Art. Astron.

† Montucla, T. I., P. II. L. I. ; Id., T. IV., P. V., L. 7.

‡ Montucla, T. IV., P. V., L. 7.

which made its first appearance in 1767, under the editorial auspices of the celebrated Maskelyne. This is computed for the meridian of the Royal Observatory, at Greenwich. Since about the year 1850, there has been also published an American work of similar character, under the name of the "American Nautical Almanac."

In so far as the diversity of the meridians employed in tables, ephemerides, maps and charts, affects only the convenience of astronomers or scientific geographers, it is a matter of comparatively small importance. In practical navigation, the case is very different. To the navigator, simplicity is of the highest importance; not only because computations at sea should be unembarrassed by any unnecessary multiplication of figures, but because diversity in the expression of the positions of places on the earth's surface, tends to confusion of thought and to possible error. Notwithstanding this, there has hitherto been no successful attempt to establish uniformity in the construction of nautical charts and tables. It is possibly true that the introduction of astronomical ephemerides into navigation has tended on the other hand rather to promote diversity than to favor uniformity. Until after the discovery of America, geographers seem uniformly to have followed Ptolemy in placing the first meridian among the Canaries. And though the Alphonseine Tables referred astronomical time to the meridian of Toledo, yet the same work contained a list of geographical latitudes referred to the original Ptolemaic first meridian.

About the close of the fifteenth century, a great impulse was given to ocean navigation by the discovery of the western continent; and in consequence of the establishment by Pope Alexander VI., in 1494, of the famous line of demarcation between the Spanish and the Portuguese—an imaginary line drawn three hundred and seventy leagues westward from the Azores, the geographers and hydrographers of those nations began to adopt the meridian of these islands as the first meridian of their charts. This is seen in the maps of Juan de la Cosa, given by Von Humboldt, in his *Examen Critique*—maps constructed about the close of the fifteenth century, and dated A. D. 1500. But the exact position of this meridian was not determined by local observation. It seems rather to have been deduced by an approximate computation or estimate of its distance west from Lisbon or Cadiz. In progress of time, the English began to use the meridian of London, and later, of Greenwich, and the French, that of Paris; while the Dutch, by the advice of their distinguished countryman, Simon Stevin, commenced, about 1600, referring their nautical longitudes to the Peak of Teneriffe.

During the sixteenth century, also, Gerhard Kauffmann, (Mercator,) the author of the projection which bears his name, and which has been found practically so valuable, placed the first meridian of his charts in the island, Del Corvo, the northernmost and smallest of the Azores, for the reason assigned that the magnetic line of no variation passed at that time through it.

The confusion arising out of so great a variety of usages began at length to be felt as a serious evil. Cardinal Richelieu, the enlightened minister of Louis XIII., in the early part of the seventeenth century, resolved to make an effort to bring about a better state of things. He accordingly invited a congress of astronomers and mathematicians to assemble at Paris, in the spring of 1630, to agree, if possible, upon a common meridian. As a result of this conference, the island of Ferro, the most southwesterly of the Canaries, was fixed upon; and a royal order establishing this decision was promulgated in July of the same year.* Unfortunately, however, the exact longitude of Ferro, with reference to any point of the continent of Europe, was at that time unknown. The determination of its position was never made by authority; and at length, in 1724, it was resolved to assume it at 20° West from Paris. Borda and Pingré give the longitudes of the easternmost and westernmost points as $20^{\circ} 17'$ and $20^{\circ} 30'$. To name the island, therefore, without naming a specific point in it, was to leave the meridian still unfixed, even had its general position been better known. At any rate, this effort to establish uniformity was productive of no practical result.

The absence of any recognized law, or any uniformity of usage on this subject, among navigators, still continuing toward the end of the seventeenth century, is illustrated by the following passages from the work entitled "*L'Art Naviger*," by Father Dechales, a work mentioned favorably by Montucla, (T. I., p. 658,) for its precision and clearness, and which was published in 1677:

"Les Astronomes," says Dechales, "prennent ordinairement pour premier meridien celuy du lieu ou ils font leur demaire, et les Pilotes le Meridien du lieu d'où ils partent."

"Les Anciens Geographes n'ont pas deu prendre pour premier Meridien celuy des dernieres terres vers l'Orient; parcequ'ils n'éstoient pas arrivez jusques au bout de ce cote-la; qu'a cause la longitude dans le Ciel, se comptant de l'Occident a l'Orient, celle de la terre se devoit prendre du mesme cote. Il estoit donc a propos de le placer dans les terres les plus Occidentales. Quelques-uns des Modernes le mettent aux Isles Fortunées, ou a l'Isle de Fer, la plus Occidentale des Canaries. Les autres aux isles du Cap Nord, comme a celle de Saint Nicholas. Mais cette diversité d'opinions est de peu d'importance; puisque nous pourrons toujours prendre pour le premiere Meridien de nostre Navigation celuy des derniers terres qui nous avons vues, ou le premier Meridien de la carte de laquelle nous nous servent."

Since the perfection of the methods of determining longitudes by lunar observations, and by chronometers, navigators have naturally referred their longitudes to the meridians for which the ephemerides of the sun and moon are computed. Of the nautical ephemerides now published, the English Nautical Almanac, the American Nautical Almanac, and the *Connaissance de Temps* are most used. But the American work employs, for all

* Gehier's Physickalischs Worterbuch, Band VI., 1.

those determinations which concern navigation, the meridian of Greenwich; so that if, in the selection of a meridian to be recommended to the acceptance of all the world, we are to limit ourselves to a choice between the meridians already in use, we cannot hesitate to give the preference to Greenwich, as involving the inconvenience of change to the smallest number.

It may be objected that the place of Greenwich on the earth is marked by no great and distinctive physical feature. A feeling that the place of the first meridian should be so distinguished, though it has been always more or less prevalent, has no substantial foundation, either as it respects the usefulness of such a meridian or the facility of its determination. That an island like Del Corvo is small and isolated, or that a peak like Teneriffe is prominent and conspicuous, might seem, at first thought, to add something to the claim of such a point to be taken as the origin of longitudes. But to the astronomical observer these circumstances are of no importance. The meridian of his observatory is marked for him by a simple trace; and this in general drawn upon the surface of an artificial monument. In the selection of a common meridian for the world, there is nothing, therefore, to restrict the most perfect freedom of choice, so far at least as the mere configuration of the earth's surface is concerned.

On the other hand it is in favor of the adoption of some meridian already largely in use, that there are in existence many laboriously prepared tables necessary to the computation of nautical ephemerides, constructed with reference to such meridians, all of which will have to be transformed, if a new meridian is adopted. This circumstance, and the additional one that Greenwich is familiar to a larger number of navigators than any other meridian of reference, must be regarded as decisive in favor of that as a common first meridian, unless such a selection should be found to be attended with some countervailing disadvantage thus far overlooked. If such a disadvantage exists, it must spring from the connection of longitude with time.

The natural day begins at any place at the rising of the sun; and as the sun is always rising somewhere, the day is always somewhere beginning. The "day of the month" expresses the number of times the sun has risen within the month, up to that day, inclusive. If a given day of any month, say, the first of January, begins at sunrise at a given place, the same day of the month will begin sooner in absolute time at places east, and later in absolute time at places west. The difference is one hour for every fifteen degrees of longitude, or twelve hours for half the circumference of the sphere. If, therefore, we suppose the first of January to begin for all places east of the assumed place at the sunrise next preceding in absolute time the sunrise of the same day at this assumed place, and for all places west of the assumed place, at the sunrise next following the same sunrise, we shall, by pushing the computation half a circle both ways, arrive at the conclusion that, in longitude one hundred and eighty degrees from the starting point, the first of January begins both twelve hours earlier and twelve hours later than the beginning of the same day at that point. This later beginning

must be counted the second, if the earlier was the first : but the same consequence will not follow if the earlier was counted as the thirty-first of December. In this latter case, the count must be supposed to be changed, from the thirty-first of December to the first of January, somewhere east of the given place, but not quite so far east as one hundred and eighty degrees. It is then evident that, if there is to be any uniformity in the regulation of the calendar of the month, and any exactness in chronological determinations, some meridian must be agreed upon at which the change of count in the monthly calendar shall begin. Such a meridian will involve to those who live near it the inconvenience that the same natural day will count a unit more in the month to those who live west of it than to those who live east, though the actual distance between them may be insignificant. And on this account it is desirable that the meridian thus selected to mark the beginning of the day should lie as far as possible in the open ocean.

Now it happens that the meridian opposite to Greenwich fulfills this condition almost as nearly as any which can be selected. It crosses no portion of any continent except the extremity of Northeastern Siberia—an inhospitable region, now peopled by savages, and incapable of ever becoming an important portion of the civilized world. Its course, then, lies among the petty islands of the great South sea ; and it merely touches the eastern angle of New Zealand, the only habitable land of importance which it approaches. This meridian seems, therefore, to be very favorably situated to serve the purpose of dividing the days of the calendar. The meridian opposed to Hamburg, or Altona, might possibly be a little more so, since it passes through Behrings Straits, nearly clearing both continents ; and it leaves the larger portion of the Pacific islands to the west. Practically, however, the claims are nearly balanced, and the advantages which Greenwich possesses in other respects have been pointed out above.

Though the natural day begins at sunrise, the astronomical day begins at the passage of the mean sun over the meridian of the place ; and the civil day begins twelve hours earlier, or at the inferior culmination immediately preceding. Taking the meridian of Greenwich, therefore, as the first meridian of Longitude, it becomes the regulator of time ; so that when the sun passes the Greenwich meridian on a given day, the same day is twelve hours advanced on the west side of the meridian opposite, but has not yet begun, and will not begin for twelve hours more, on the east side of the same meridian. This explains the provisions of the Code defining the day.

ARTICLE 517. The meridian of Greenwich to be the prime meridian.

518. Maps, charts, nautical tables, &c., how to be prepared.
519. Public vessels to be furnished with tables and charts conformed to the meridian of Greenwich, and required to keep their logs in accordance therewith.

Longitude and Time.

520. The Gregorian style of reckoning to be employed.
521. Of the length of the year, and of leap years.
522. The term "year," in contracts and written instruments, how to be understood.
523. Divisions of the year.
524. The day defined.

The meridian of Greenwich to be the prime meridian.

517. In the determination of positions upon the earth's surface, by co-ordinates of latitude and longitude, the meridian passing through the observatory at Greenwich, England, shall be taken as the prime meridian ; and longitudes shall be reckoned from that, eastwardly and westwardly, one hundred and eighty degrees, to the meridian opposite, or three hundred and sixty degrees, to the same meridian again. And in all legislative, executive and judicial acts, and in public records of every description, in which the positions of places are defined, or limits designated, or boundaries fixed, by means of co-ordinates of latitude and longitude, the longitudes stated shall be the longitudes east or west from the meridian of Greenwich ; and when longitudes are given in such documents, without specification of the meridian from which they are measured, they shall be understood to be longitudes east or west from the meridian of Greenwich.

Maps, charts, nautical tables, &c., how to be prepared.

518. All maps, charts, nautical and astronomical tables, and other publications designed for the use of navigators, which may be prepared and put into circulation by authority of the government of any nation, shall be conformed, as it respects the reckoning of longitude, to the provisions of the last article.

Public vessels to be furnished with tables and charts conformed to the meridian of Greenwich, and required to keep their logs in accordance therewith.

519. All sea-going vessels employed, in any capacity, in the service of any nation, shall be furnished with charts, tables, and such other aids to navigation as may be necessary, prepared as required in article 518; and the commanders of all such vessels shall be required, in keeping their logs, to state all their longitudes, determined by observation or computation, according to the values of the same as referred to the meridian of Greenwich.

The Gregorian style of reckoning to be employed.

520. Time shall be computed according to the Gregorian style of reckoning now prevalent in Western Europe and in America, according to which the current year is the one thousand eight hundred and seventy-first since the epoch;* and the first day of January of every year hereafter shall be taken to be the first day of the year.

Of the length of the year, and of leap years.

521. Every year consists of three hundred and sixty-five days, except those whose numerical designations are exactly divisible by four, without remainder, which years consist each of three hundred and sixty-six days; except that of the centurial years, or the final years of the successive centuries, only those as to which the number of the centuries completed is divisible by four, consist of three hundred and sixty-six days; and the other centurial years consist of three hundred and sixty-five days only.

The length of the tropical year is nearly three hundred and sixty-five days and a quarter, but falls short of this value by a fraction equal to 11.232426 minutes. Julius Cæsar, in his reformation of the calendar, which

* It was in this year that the present paper was prepared.

took place forty-six years before the Christian era, disregarded this minute quantity, and treated the year as being equal to three hundred and sixty-five and a quarter days exactly. Each common civil year being thus a quarter of a day too short, the intercalation of an entire day, or four quarters of a day, at the end of every fourth year, was presumed to maintain, with sufficient accuracy and permanence, the adjustment of the equinoxes and solstices to the places which they originally occupied in the calendar.

The error of the Julian year produces no very perceptible effect, when a limited period only of years is considered; but the same is not true when the period extends to several centuries. Eleven minutes are 11-1440ths of a day. In four hundred years, this becomes 4400-1440ths of a day, which is equal to three days and one-eighteenth of a day. Or, if we use the more exact figures, given above, the error of the Julian year, multiplied by four hundred, amounts to three days and twelve one-hundredths of a day. The Julian intercalation of one day in four years, therefore, displaces the equinoxes in the calendar by more than three days in four centuries.

At the time of the assembling of the Council of Nicaea, A. D. 325, the vernal equinox fell upon the twenty-first day of March. Toward the close of the sixteenth century, it was observed to fall on the eleventh. In the year 1582, Pope Gregory XIII published the calendar which is known by his name: in which, by adding ten to the count of every day in every month, from the fourth day of October, in that year, inclusive, onward, he restored the equinox to the place it occupied in the calendar in the year 325. This was a piece of reformation uncalled for in any interest either ecclesiastical or secular, and it had the effect of preventing, for a long time, the acceptance of his style of reckoning, and what is of more importance, of his rules for maintaining the adjustment of the calendar months to the seasons, by the Protestant nations of Europe, and by those adhering to the church of the East. These rules constitute a truly valuable improvement, and their simplicity, no less than their importance, would have secured for them universal favor and adoption at a very early period, in spite of the jealousies which were sure to be awakened by anything proceeding from Rome which should bear the appearance of an attempt to dictate to the world, had they not been accompanied by the large and unnecessary change above mentioned, in the absolute reckoning of the day.

As things actually fell out, the Italian States (mostly), with Spain and Portugal, adopted the Gregorian calendar from the day (October 4, 1582,) named for its commencement, in the Papal Bull. France adopted it two months later, calling the day following the ninth of December, the twentieth, and so onward. In the same year, the matter was discussed at Ansburg, in the diet of the German Empire; and the Catholic States of Germany adopted the new calendar in the year following.* The Protest-

* Bond's Handy Book of Dates, pp. 18, 19.

ant States, however, clung to the old calendar; and the consequence was that, in parts of the country where the population was generally mixed, there arose a great deal of confusion and discord. This state of things continued for more than a century; but at last the Protestants gave way, and in the year 1700, the new calendar was introduced throughout all Germany, the day following the eighteenth of February being called the first of March. At the same time, the new calendar was adopted in Denmark and in Holland; and in 1701, it was adopted also in the Protestant Cantons of Switzerland, the day following the thirty-first of December being called the twelfth of January. The increase in count was now eleven days, instead of ten, because the centurial year 1700 had not been reckoned a leap year under the Gregorian system. England accepted the new calendar in 1752, the day following the second of September in that year being called the fourteenth. In the following year, Sweden did the same, calling the day after the twenty-eighth of February the twelfth of March.

The Julian calendar now continues to be maintained only by Russia, and the adherents of the Greek church generally. Since there is no longer any possibility of securing uniformity of practice in the reckoning of time, but by universal acquiescence in the Gregorian calendar, it is greatly to be hoped that the enlightened government of the Russian Empire will not long delay the introduction of the desired change among their people.

The term "year," in contracts and written instruments, how to be understood.

522. Whenever the term "year" or "years" is used in any statute, deed, contract, verbal or written, or in any public or private instrument whatever, the year intended shall be understood to consist of three hundred and sixty-five days; the half year of one hundred and eighty-two days; and the quarter of a year, of ninety-one days; and if, within the limits of any period so computed, the added day of leap year shall fall, such added day shall not be counted as enlarging the number of days of that period.

Division of the year.

523. The year shall continue to be divided, as at present, into twelve months, which months shall retain the names by which they are at present known, and each month shall

consist of the same number of days as are assigned to it in the calendars now in use among all Christian nations, viz.:

January,.....	31 days.	June,.....	30 days.
February,.....	28 "	July,.....	31 "
in common years,		August,.....	31 "
or, in leap years,.....	29 "	September,.....	30 "
March,.....	31 "	October,.....	31 "
April.....	30 "	November,.....	30 "
May,.....	31 "	December,.....	31 "

And whenever the term "month" shall be used in any statute, deed, contract, verbal or written, or in any public or private instrument whatever, this term shall be construed to mean a calendar month, in accordance with the foregoing scheme.

In the reformed calendar of Julius Cæsar, as originally constructed, the months were made to consist of thirty-one days and thirty days alternately, beginning with March.* As the common year consists of but three hundred and sixty-five days, the final month of the year, on this plan, falls a day short of thirty days in common years, and contains fully thirty only in leap years. Had the alternation been inverted, making the first month to consist of thirty days, and the second, of thirty-one, and so on, no month would ever have fallen short of thirty days, or have exceeded thirty-one.

The name of Julius was given to the month Quintilis, in honor of the great reformer. Augustus afterwards gave his name also to the month Sextilis; and the Roman Senate, in a spirit of contemptible sycophancy, stole a day from February, already too short, to add to August, that the month named after the reigning Emperor might not be a less important one than that which had received its name from his illustrious predecessor.

The distribution of the days of the year among the months is, therefore, at present entirely anomalous. Moreover, the introduction of the intercalary day of leap year at the end of the second month of the year, rather than at the end of the year itself, is a source of considerable inconvenience, especially in connection with the calendar of the church. The following scheme for the better distribution of the days of the year among the months, and the transfer of the quadrennial intercalation to the close of the year is, therefore, presented as worthy of consideration.

The year to be divided into sextiles, each of two months. Each sextile to be made up of a first month, of thirty days, and a second month, of thirty-

* Encycl. Brit., Art. Calendar.

one days, with the exception of the last sextile, in which the second month has only thirty days in common years, and thirty-one days in leap years, as follows :

<i>First Sextile</i>	{ January.....30 days. February.....31 "	<i>Fourth Sextile.</i>	{ July.....30 days. August.....31 "
<i>Second</i> " "	{ March.....30 " April.....31 "	<i>Fifth</i> " "	{ September.....30 " October.....31 "
<i>Third</i> " "	{ May.....30 " June.....31 "	<i>Sixth</i> " "	{ November.....30 " December.....30 " Or, in leap year 31 "

The day defined.

524. In order to prevent confusion of dates, in consequence of differences of local times, it is to be understood :

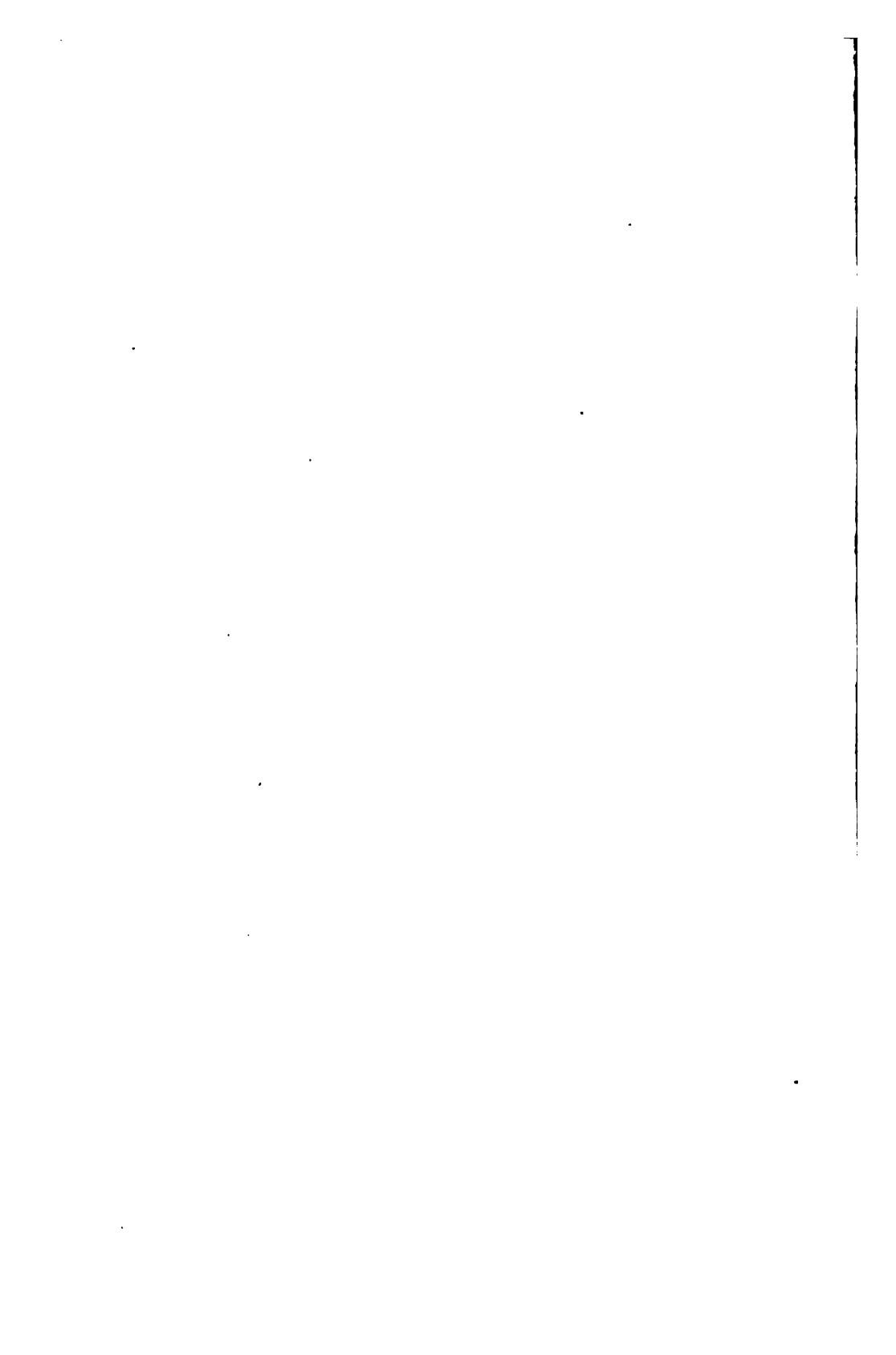
First, that the civil day shall begin, at each place, twelve hours of mean solar time before the passage of the mean sun over the meridian at that place, and shall end twelve hours of mean solar time after such meridian passage.

Secondly, that at the moment of mean solar meridian passage at Greenwich on the first day of January, the day shall be accounted the first day of January throughout the world ; it being noon at that moment in the meridian of Greenwich, afternoon throughout all the one hundred and eighty degrees of longitude eastward from Greenwich, and before noon throughout all the one hundred and eighty degrees of longitude westward from Greenwich ; and the same shall be true for every other day of the year ; that is to say, the moment of mean solar meridian passage at Greenwich shall be that in which the day is of the same name throughout the world, whatever may be the degree of advancement of the day, by local time, in different longitudes.

So long as the entire extent of the known world scarcely exceeded in longitude a third part of the earth's circumference there was no danger that an error of a day could be committed in assigning the date of an event. Nor was the possibility of such an error considerable even after the route to the Indies had been discovered by the way of the Cape of Good Hope. But when the opposite route, by Cape Horn, had been successfully explored,

and the Spanish navigators, who had followed this course, met the Portuguese, who had come the other way, in the Phillipine Islands, it was found that they differed in their reckonings of time by an entire day.

So long, however, as the enlightenment of the world was mainly concentrated in Europe, or extended on the western continent but little beyond the Atlantic coast, the possibilities of confusion in chronology, for want of a universally received definition of the beginning and ending of the calendar day, were not great. The case is quite different at present, when the great islands of Australia are occupied by flourishing British colonies, and both shores of North America are peopled by an enterprising race, engaged in prosecuting extensive commercial enterprises in both hemispheres. It is becoming, therefore, a matter of greater importance every day, that there should be established some universal rule for defining the calendar day for all the world. The reasons why the meridian of Greenwich should be fixed upon, rather than any other, for the purposes of this definition, have been already assigned in the Article relating to longitude.



THE WORLD'S STOCK
OF THE
PRECIOUS METALS,

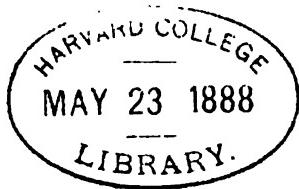
By F. A. P. BARNARD, L. L. D.,

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PRESIDENT OF COLUMBIA COLLEGE.

FROM THE
PROCEEDINGS
OF THE
American Metrological Society,

VOL. II.

NEW YORK:
GREGORY BROS., PRINTERS, 34 CARMINE ST.,
1882.



Columbia College.

THE WORLD'S STOCK OF THE PRECIOUS METALS.

"It is an astonishing and as yet unexplained phenomenon, that of the immense amount of the noble metals produced within the memory of man, only a trifling portion is found in circulation as a measure of value at the present time. What has become of the rest of this gold and silver is a question involved in obscurity. Thus the moderate amount of gold employed in money exchanges at present, is only equal to the gold-production of the last twenty-five years. With silver it is somewhat different. Of this metal the amount existing in the form of money at this moment equals perhaps the product of a period of eighty years."

These words are translated from an essay on the precious metals by Mr. F. W. Jacobj, published at Leipzig, early in the present year. Considering the great durability of these substances, and the common belief that by far the greater portion of them in existence, at any time, is in the form of coin in actual circulation or in known depositories, the first impression produced by the statement is one of incredulity. Some idea of the relative proportions of gold and silver consumed in the arts and converted into coin may be formed by comparison of the tables relating to this subject appended to the annual reports of the Director of the Mint of the United States, from year to year. Thus, the Report for 1880 gives as the total amount of gold which in its several forms of ingots and American and foreign coins was melted up for manufacturing purposes in this country, during the year 1879, a sum equal to \$8,634,193; and as the total amount of silver used for similar purposes during the same time the sum of \$3,464,179. The total gold coinage at the mints of the United States for the same year amounted to \$39,080,080; and the total silver coinage to \$27,568,235. Thus the consumption of gold for the arts during this period in the United States amounted to but little over one-sixth part of the whole amount operated on; and the total consumption of silver for similar purposes was about equal to one-eighth of the whole. It is probable that in France and England the proportion may be somewhat greater; and in

India there can be little doubt that as to silver, at least, the amount consumed in the manufacture of personal ornaments, is very much in excess of that above stated. But it may be pretty safely assumed that of the gold now annually produced not more than one-fifth part at farthest goes into the form of fixed capital in manufacture, while all the rest is converted into coin.*

The waste by abrasion of manufactured gold is probably less than that which takes place from the same cause in coin. Articles of ornament are very little exposed to injury and are always carefully guarded. Gold is very little used for table plate, and the only articles of this metal which are liable to suffer much from wear are rings and watch-cases, but the durability of these is well known.

Coin in actual circulation is liable to lose weight not only from ordinary wear but from fraudulent practices. Silver suffers from both these causes more than gold—probably because the coinage of the more valuable metal is constantly subjected to the test of weight in banking-houses, and light gold coins are easily detected and rejected. In fact, a sovereign, in Great Britain, which has fallen three quarters of a grain below standard in weight

* On this point, however, opinions largely differ. In Homans's Dictionary of Commerce, the estimate of the amount of the precious metals consumed in the arts is placed much higher than this. Assuming a total annual production of \$141,500,000, he supposes \$28,000,000 to be lost in wear and tear, \$57,000,000 to be coined, and \$56,000,000 consumed in manufacture. He says, "It is difficult to acquire any satisfactory information in regard to the quantity of bullion consumed in the arts. Jacob estimated its amount in 1830, at about \$29,500,000 a year. This estimate was in various respects wide of the mark, and it was on the whole considerably under the true amount. And supposing the consumption of the precious metals in the arts to have amounted to thirty-one and a half or thirty-five millions of dollars in 1830, it must now be much greater. There has everywhere, but especially in England, America, Germany and Russia, been an extraordinary increase of population and wealth during the last twenty-seven years. And the taste for plate, splendid furniture, and luxurious accommodations of all sorts has certainly increased in at least an equal degree. It is well known that speculators, and those who rapidly attain to affluence, are the principal buyers of plate and other costly articles. And taking these and other circumstances into account, we are disposed to conclude that the expenditure of bullion in the arts, in Europe, America and Australia cannot, at present, (1863), be under, if it do not exceed, seventy millions of dollars a year. But of this a portion, estimated at about one-fifth or twenty per cent., is supposed to be obtained from the fusion of old plate, the burning of lace, picture frames, etc. Hence, if we deduct from the seventy millions of dollars used in the arts, twenty per cent. for the old bullion, we have fifty-six millions for the total quantity of the supplies of the mines annually disposed of in this way." This seems to the present writer a very extravagant estimate.

(gr. 0.77447), is legally uncurrent, and it is the duty of every person to whom such a coin shall be tendered in payment, to "cut, break or deface it," and "the person tendering the same shall bear the loss." The consequence is that few light coins circulate in England. From a report made in 1869 by Dr. Wm. Farr, Superintendent of the Statistical Department of the Registrar General's Office in London, it appears that the average "life of the sovereign" is about thirty-one years. Hence as the sovereign weighs 123.27447 grains, it loses about one-hundred and sixtieth part of its weight in thirty-one years, at which rate uniformly continued it would lose its entire weight in five thousand years. The rate, however, would not be uniformly continued, but would grow less as the coin grew lighter. But as it is stopped in circulation and re-coined when it becomes legally uncurrent, it may perhaps properly enough be said that the entire gold coinage of a country loses by abrasion about one five thousandth part of its value per annum.

The loss of the silver coinage is much more rapid, but the means of estimating its amount are inadequate and unsatisfactory. It appears from statements in the Letter of Lord Liverpool in 1805 to King George III., on the State of the British coinage, that from certain trials made at the Exchange Office in 1787, and again eleven years later in 1798, the different denominations of silver coin had apparently lost in the interval,

Crowns,	$\frac{1}{5}$	of 1 per centum in weight.
Half-Crowns, 1 $\frac{1}{2}$	"	" "
Shillings, 5 $\frac{1}{20}$	"	" "
Six-pences, 3 $\frac{1}{4}$	"	" "

Inasmuch as Lord Liverpool states that, at the time of these trials, silver crowns had altogether disappeared from general circulation, not much weight is to be attached to the first of these observations, which would seem to indicate a loss of weight per annum of only one fifty-five-hundredth part. The loss on the half-crowns is about one six-hundredth part per annum; that on the shillings one two-hundred and thirtieth part, and that on the six-pences one three-hundred and fiftieth part. We may perhaps infer with sufficient accuracy that the mean loss on the minor

silver coinage was about one four-hundredth part per annum. It would follow that the cost of repairing the effects of abrasion of the silver coinage would, in four hundred years be equal to the value of the entire coinage; while for gold coinage the same charge would not equal the value of the coinage in less than about five thousand years.

It is to be considered, however, that the observed waste of the British silver coins, in the experiments above mentioned, was doubtless abnormally great, owing to the fact that the existing stock of fractional silver in England, at that time, was very far below the wants of trade, so that the coin actually existing was kept in unusually active circulation. Under ordinary circumstances it is hardly probable that the annual waste would exceed one five-hundredth part of the value of the silver in circulation. This waste, however, it is to be noticed, falls mainly on the smaller denominations. Indeed it is not probable that, under any circumstances, the large silver coins of a country will suffer from abrasion to the same extent as the small. Their inconvenience both in size and in weight prevents their being carried about in quantities and passed freely from hand to hand. For the most part they will be stored in secure depositories, and being rarely moved will remain substantially unaltered for long periods of time. In our own country, at this present time, silver dollars to the amount of nearly or quite one hundred millions are accumulated in the Treasury of the United States, while one-half of the amount are probably represented in the circulation by silver certificates. It is only the small denominations of silver coinage therefore which waste rapidly, while the large, which constitute the principal value, scarcely waste at all. It is for reasons entirely similar that the waste of gold is less than that of silver.

The inalterable nature of the noble metals secures the coins struck from them from waste by the corrosive action of natural reagents. Apart from abrasion, therefore, the only conceivable causes by which the mass of a coinage once created can be diminished are transformation into objects of ornament, luxury or use, and positive loss by sea or in concealed and forgotten hoards on land. To some extent also coin may be reduced to bullion by

the effect of accidental fires : but this is merely a change of form, without change of value. But the losses from what may be classed as fortuitous causes, though absolutely considerable, can hardly form, all together, more than an insignificant portion of the coinage at any time in existence, or even of the annual additions to the stock by the constant operation of more than a hundred mints. And in the statistics gathered in regard to the consumption of gold and silver in the arts, account is taken of the amount of coin as well as of bullion melted down for this purpose.* But we have seen that at the present time, allowing for the annual consumption in this way, nearly five-sixths of the gold and seven-eighths of the silver annually produced is converted into coin.

Now supposing these ratios to have prevailed indefinitely during the past as well as in the present, it is manifest enough that the existing stock of coined gold and silver ought to be equal to the

* In the opinion of many who have written on this subject, the losses of the precious metals by burying in secret places have in past ages been very great and even in certain parts of the world, they continue to occur on a considerable scale at the present time. In the Cyclopaedia of Commerce, edited by J. Smith Homans, published in New York in 1888, we find (Article *Precious Metals*), the following remarks : "It is singular that in estimating the consumption of gold and silver, Jacob did not make any allusion to the practice which has uniformly prevailed in all countries harassed by intestine commotions, of burying treasure in the earth. Of the hoards so deposited a very considerable portion has been altogether lost ; and there can be no doubt that this has been one of the principal means by which the stock of the precious metals has been kept down to its present level. Every one is aware that, during the Middle Ages, *treasure-trove*, or money dug from the ground by chance finders, belonged to the Crown, and formed no inconsiderable part of the royal revenue of England and other countries. The practice has always prevailed in Turkey, Persia, India, China and generally in all parts of the East. The extortion practised on the inhabitants, and the want of all security, make them look upon the money they have hidden as their only wealth—the only thing they can really call their own. 'In India' says Mr. Luke Scrofton, 'the Hindoos bury their money under ground, often with such secrecy as not to trust their own children with the knowledge of it ; and it is amazing what they will suffer rather than betray it. When their tyrants have tried all manner of corporal punishment on them, they threaten to defile them ; but even that often fails ; for, resentment prevailing over the love of life, they frequently rip up their bowels, or poison themselves and carry the secret to their graves. And the sums lost in this manner, in some measure account why the silver of India does not increase, though there are such quantities continually coming into it, and none going out.' (On the Government of Hindostan, p. 16.) The editor cites additional authorities to the same effect and says that the practice "at this moment prevail to a great extent throughout all the vast countries which stretch from the Adriatic to the Chinese Sea." He adds, "It has always been acted upon to a considerable extent in Russia, Germany, Italy and France ; and in the latter during the revolutionary anarchy, immense sums were buried, of which it is abundantly certain a large proportion will never be resuscitated." It is probable that sufficient weight has not been attached to this source of loss in the remarks the text above.

total production of those metals for several hundred years at least, instead of corresponding, as Mr. Jacobj puts it, to that of the last twenty-five years for gold, and the last eighty for silver. It cannot but be interesting, therefore, to compare the facts in the case—the facts at least as the statisticians give them to us, for after all we cannot be sure of their exactness. The statistics of production, for a century past, may probably be relied on as being at least approximations to the truth. Those of coinage are matters more nearly approaching certainty. But the question, what becomes of the coin is much more difficult of solution. If in our own time the returns gathered by governmental inquiry as to the amounts melted down for manufacturing purposes are exhaustive (which is doubtful), it is by no means allowable to assume the same proportions to have been true in the past. Indeed, it was the estimate of Humboldt, early in this century (1803), that the amount of gold and silver consumed in Europe in manufactures was then not less than twenty-three millions of dollars, of which two-fifths in value (\$9,200,000), was gold and three-fifths (\$13,800,000) silver.* According to Soetbeer,† the average annual gold production of the world from 1801 to 1810 was 17,778 kilograms, and that of silver, 894,150 kilograms; which reduced to dollars give for the value of the annual production of gold \$11,852,000, and for that of silver \$35,766,000.† At the time in question, therefore, only a little more than one-fourth of the annual gold supply was coined, and a little more than three-fifths of the silver supply. And there is great reason to believe that, in every century preceding the present, a vastly greater proportion of the precious metals has been devoted to purposes of ostentation or ornament or luxury, than is true at the present time.‡ The barbaric splendors of the monarchs of earlier and ruder ages are proverbial.

During the last half century, however we may regard it as

* Letter of G. White, Cashier of the Bank of the United States, to the Secretary of the Treasury, November 16, 1828—reprinted in the Report of the U. S. Delegates to the International Monetary Conference of 1878, pp. 6.0—6.9.

† Edelmetall—Production, Gotha, 1879.

‡ This is on supposition the pure metals are intended, which is of course to be assumed since the fineness is not mentioned.

§ This opinion it will be seen is greatly at variance with that of Homans' given above.

nearly certain that the annual coinage of gold has been equal to at least four-fifths of the production, and that of silver to five-sixths. On this supposition, and assuming the statement of Mr. Jacobj, quoted in the beginning of this paper, to be true, only one-fifth part of the gold coinage now in existence is derived from the product of years earlier than a quarter of a century past, and only a sixth of the present silver coinage consists of metal produced more than eighty years ago. It follows that, by far the greater part of the coin struck in the years preceding the limited periods just named, have been melted down without being re-coined, and so have remained in the form of bullion, or have been converted into forms of use or ornament without having been taken account of in the statistics of industry, or possibly have been exported to the far East which absorbs indefinitely but never gives back. The only alternative is to suppose that these vast amounts of the precious metals have ceased to exist—a supposition which, considering their inalterability from the operation of natural causes, and the slowness with which they waste from the effect of abrasion in use, is altogether incredible.

It is a matter of some interest to inquire what is the amount of the precious metals, which, according to this hypothesis must have disappeared. The statistics of the world's production of gold and silver have been gathered, though with somewhat doubtful accuracy, from year to year, at least since the discovery of America. For the period preceding that important event we have no data on which reliance can be placed. Every thing is conjecture.

In the Report on the precious metals by Prof. Wm. P. Blake, vol. II. of the U. S. Reports on the Universal Exposition at Paris in 1867, there are given the estimates of Jacob in his "Historical Inquiry," &c., (1831), and of Humboldt in his "Political Essay upon the Kingdom of New Spain," in regard to the production of gold and silver, the first for the entire world, from 1492 to 1809, and the second for America, from 1492 to 1803. Reducing the first of these to the period ending in 1803 also, we shall have, according to Jacob, a value of (in round numbers), \$6,365,000,000 for the joint production of both metals from the discovery of America up to 1803.

Humboldt's estimate for America, for the same period, gives, of gold £300,803,000, \$1,463,707,885 ; and of silver £884,350,635 = \$1,303,250,190, or in all \$5,766,958,075. Dividing the estimate of Jacob for the world in the same proportion, we shall have for gold \$1,612,000,000, and for silver \$4,753,000,000.

For the period preceding the sixteenth century, the estimates are hardly worth citing. Jacob assumes the world's stock of the precious metals in the time of Augustus to have amounted to £358,000,000, an assumption founded on no substantial evidence. From Augustus to Charlemagne, he makes the production to be absolutely nothing, while he estimates the loss by waste and wear in the mean time to reach the extraordinary amount of more than nine-tenths of the entire stock at the date first named; leaving only £34,000,000 in existence in the year 806. From this time onward to the discovery of America, a period of nearly 690 years, he presumes the annual production not to have exceeded £100,000, and this he supposes only to have sufficed to compensate for loss and wear. Prof. Blake very justly remarks : "It appears improbable that the loss by wear has been as great as Jacob assumes, and much more doubtful that the production of gold and silver utterly ceased during the period from the reign of Augustus to 800. * * * * Gold digging is an occupation which may be followed in the most dark and troubled times, and by savage races ; and as we have no reason to conclude that the purchasing power of the precious metals was impaired during that period, the usual inducement for their extraction from the earth remained."

If we take the estimates of Jacob, however, as they stand, we must add \$2,077,000,000, produced before 1492, to the \$6,365,000,000 produced since, as above, in order to obtain the total production up to 1803, which we shall find to be \$8,442,000,000, of which \$2,138,000,000 is gold, and \$6,304,000,000 silver.

Since the date last mentioned is now nearly eighty years past, it follows that, if the statement of Mr. Jacobj cited in the beginning of this article is well founded, this enormous sum of more than six thousand millions of silver has furnished nothing to the stock of silver coin existing in the world at the present time.

The amount of this stock is given in the report of the Director of the U. S. Mint for 1880, for thirty-one countries, including all in which the precious metals are coined to any appreciable extent; and consists of the value of \$2,060,697,480 full legal tender, and \$422,252,541, limited legal tender ; in all \$2,482,950,021.

In order to compare this with the production of the last eighty years, we observe, first, that Prof. Blake, in the report above referred to, adopts from Danson (Journal London Statistical Society, vol. XIV, 1851) the statement that from 1803 to 1848 the silver of the Americas amounted to \$1,244,380,794. From a discussion of data derived from Humboldt, Phillips, Birkmyre and others, he estimates the total production of Europe and Asiatic Russia during the same period at \$529,000,000, of which about four-sevenths, or \$302,000,000 are silver and \$227,000,000 gold. This brings the total of the world's silver production between the dates named to the sum of \$1,546,380,794. From that time up to 1880, the increase in America has been prodigious, amounting, according to recent authentic statements, to no less a sum than \$1,739,112,000. The joint production of Europe and Asiatic Russia, as given by Blake, was in 1853, in round numbers, \$8,000,000. If for the period of thirty-two years this production continued uniform (and there has been no great variation), it would amount in 1880 to \$256,000,000. Adding these two sums to the total found above for 1848, we find for the entire production of silver for the world, from 1803 to 1880, the extraordinary total of \$3,541,000,000.

It is not true therefore, at least in appearance, that the world's present stock of silver coin is equal to the production of that metal for the last eighty years. In fact, the production since 1848, which from the above data we find to have reached the sum of \$1,995,493,000, is very nearly equal to the existing stock of silver coin having a full legal tender character, as given above from the report of the Director of the Mint. If to this we add the product from 1840 to 1848, amounting to about \$140,000,000, the sum \$2,435,000,000, will fall very little short of the entire stock of silver coin both of full and limited legal tender.

Mr. Jacobj is not correct, therefore, in saying that the amount

of silver now in use in effecting the world's exchanges is equal to the production of the past eighty years. It is not far from being equal to the production of the past forty.

Let us make now a similar comparison in regard to gold. We have seen above that the production of this metal in Europe and in Asiatic Russia, 1803 to 1848, amounts to \$227,000,000. During the same time according to Blake the American production was \$710,807,057. The sum of these numbers is \$937,807,057. From recent authentic statements it appears that the product from 1848 up to 1855, inclusive of the latter year, was \$754,220,000⁽¹⁾; and this added to the foregoing sum, brings up the total to \$1,692,-027,057, all of which enormous sum, if Mr. Jacobj is correct, has, since the beginning of this century, either ceased to exist, or has been transformed into objects of art or use, or has been exported to those eastern countries which absorb without limit but never restore.

From 1855 to 1880, we find from the authorities last quoted that the production of gold has amounted to \$2,738,995,000. This result corresponds nearly with that obtained by Soetbeer, as quoted in the Report of the Delegates of the U. S. to the International Monetary Conference of 1878, which gives for the twenty years from 1855 to 1875 the total of \$2,199,383,340, which increased by one-fourth gives \$2,749,229,175, an amount closely corresponding to that obtained above. From the report of the Director of the Mint already cited, the present stock of gold coin appears to be equal to \$2,819,303,004. The assumption of Mr. Jacobj as to this metal is, therefore, confirmed with an unexpected approach to exactness.

From what has been said, it appears that since the discovery of America there has been produced an amount of the precious metals equal to \$14,307,255,000, of which \$5,726,255,000 is gold and \$8,581,000,000 is silver. If we add to this the amount supposed to have existed in the time of Augustus, and also that supposed to have been produced between that time and 1492, we shall obtain a total of \$16,384,255,000 for the total stock in 1880, no allowance being made for waste or loss, of which total \$5,726,-255,000 only are accounted for in the existing coinage, and \$8,658,-

000,000 have disappeared. How much of this vast sum remains in existence, and where we are to look for it, if it exists, are questions incapable of any satisfactory solution.

It cannot be denied that these estimates are to a great extent purely conjectural ; but they are also, beyond question, below the truth. No adequate account is taken in them of the production before 1492, and none at all of the first eight centuries of the period embraced. It is further to be observed that the estimate of the amount of the precious metals existing in the time of Augustus is altogether arbitrary, and is incredibly small. We have no statistics on the subject applying to the period before the Christian era, but we have recorded facts which show that gold and silver existed in astonishing abundance a thousand years earlier, and continued from that time onward to be accumulated. in prodigious amounts in the treasuries of the Kings of Asia Minor and the farther east. In the Roman empire too, long after the time of Augustus, the vast fortunes acquired by individuals, the extravagance of luxury indulged in not only by the Emperors themselves but by Senators or private citizens, the lavish donatives given by the generals to their soldiers, the gifts of similar character bestowed by Emperors on the common people, and the immense stores of ready money we read of as existing in private hands, are all evidence of the existence of gold and silver in incalculable amounts throughout all the world, during the earlier centuries of the Christian era. Many examples illustrative of the truth of these remarks have been gathered by Dr. John Arbuthnot in his Dissertation on Ancient Coins, Weights and Measures, published in 1754.

As examples of wealth in the hands of individuals, may be instanced the case of Apicius the epicure, who expended a fortune of \$1,039,000 in extravagant living ; that of Pallas, a freedman of Claudius, whose wealth amounted to \$12,109,000 ; that of Lentulus the Augur, whose property amounted to \$16,145,830; that of Seneca the philosopher, who is said to have acquired in four years \$12,100,000; and that of Crassus who having been left by his father with a fortune of \$240,000, increased it to \$6,878,000. Dr. Arbuthnot appears to regard the extraordinary magnitude of

the debts which individuals were able to incur, as no less significant of the state of the times (the first century), in regard to prodigality, than that of their possessions. Thus Cæsar before being employed in any foreign command ran up a debt of \$10,091,000, and Plutarch says that before he held any place in the public service at home, he owed \$1,259,375. The debts of Milo amounted to \$2,825,520. Antony at the Ides of March owed \$1,614,580 which he paid before the Kalends of April. Otho, before he became Emperor, ran into debt to the amount of \$8,010,000.

Among other extravagances of luxury it may be mentioned that Caligula expended on a single supper \$403,645, and that Vitellius expended upon his table in a single year (Tacitus says in a few months), \$36,328,125.

The expenditures of the Romans for plate and jewels were lavish to the extreme of prodigality. In the time of Sylla they used dishes of solid silver or solid gold, many of them weighing one hundred pounds apiece and worth singly nearly \$1,366, taking no account of the cost of workmanship. Somewhat later even their kitchen vessels were of silver, and their coaches and carriages were of the same metal. Heliogabalus had them of gold, gemmed with precious stones. Julius Cæsar had a golden bedstead. Tables were in some instances made of gold ornamented with gems. A drinking cup worth \$17,075 is mentioned as having been broken purposely by Petronius, "in order to disappoint Nero." There were candlesticks also worth more than \$2,000 a-piece. Poppaea, Nero's wife, had her horses and mules shod with gold. It is even asserted that some of these devotees of luxury had commodes made of the same valuable metal. There is a story of a Prince Ptolemy in Pompey's time who feasted a thousand guests, giving them each a gold drinking cup, and changing the cup as often as the dishes were changed.

The Roman women were much addicted to the display of jewelry on their persons. Lollia Paulina, wife of Caligula, blazed with them in private as well as in public. "I have seen her," says the elder Pliny, "not at a public ceremony but in a family supper, covered with emeralds and pearls made more brilliant by being interspersed with each other; her head, her hair, her throat,

her ears, her neck, her arms, her fingers were all loaded with them ; there was in all a value of forty millions of sesterces (\$1,614,165); she did not owe these to the prodigality of the Emperor, they were procured with the inheritance she received from her grand-father." Julius Cæsar gave to the mother of Brutus a pearl which cost \$242,000. The famous pearl dissolved by Cleopatra at a feast with Pompey, cost over \$400,000.

Some idea of the value of offices in Rome may be formed from the fact that Pompey when his governments were continued to him for four years, was allowed a yearly salary of \$968,750. Also Claudio paid for admittance to a priesthood (not the high priesthood), \$323,000. The opportunities for fraudulent emolument from office, are furthermore made apparent from the case of Verres, whom Cicero charged with having gathered by plunder during his administration in Sicily, no less a sum than \$1,614,580, while his secretary profited in like manner to the extent of \$52,470.

The amount of treasure in gold and silver seized and brought to Rome by successful Emperors and generals was sometimes very great. Paulus Æmilius, after the defeat of Perseus, King of Macedon, brought into the Treasury \$9,283,850. Scipio, after the defeat of Antiochus the great, brought \$8,072,915. In the consulship of Sextus Julius and Lucius Marcius, there was in the Treasury an amount of \$260,512,430. Cæsar brought in at one time 65,000 talents=\$125,937,500. Appian says that, in the reign of the second King after Alexander, there was in the Treasury of Egypt seventy-four myriads of talents=\$716,875,000. And Herod is said to have left to Cæsar one thousand myriads of talents = \$9,687,500,000, which seems incredible. Plutarch says that Anthony exacted from Asia at one time twenty myriads of talents = \$193,750,000.

The large and frequent donatives made by the Emperors to their troops afford evidence of the magnitude of the sums of ready money which they were careful to keep by them. And as generals on their first exaltation to the imperial dignity were under the necessity of coming forward with their benefactions without delay, and seem never to have been behindhand, this fact shows how common a thing it was for a distinguished soldier to be possessed

of wealth. The sum bestowed per man varied with circumstances between wide limits from one or two hundred *asses* ($=\$32.29$ or $\$64.58$), to $\$500$ or more, in some cases much more. But even a small sum per man distributed through a great army produces a large total. The sums cannot, in general, be computed without a knowledge of the numerical strength of the armies. Occasionally the total sums are mentioned. Thus Nero is said to have spent in such gifts from time to time $\$88,802,080$; Vitellius $\$92,661,482$ and Caligula in one year $\$108,984,375$. When an Emperor was created by the *Prætorian* guard (a not very rare occurrence), it is possible to calculate the total amount of the donative, when the amount per man is known, since the *prætorian* guard was fixed at 16,000 men after the time of Vitellius. But the sum so computed ought to be considerably increased, because the officers were paid at a much higher rate than the private soldiers. After the assassination of Pertinax, the *prætorians* set up the imperial dignity at auction, and it was bid off by Didius Julianus at $\$1,009.165$ per man. This multiplied by 16,000 gives $\$16,146,640$ as the cost of a supremacy which the fortunate purchaser enjoyed only sixty-six days, at the end of which brief period of gratified ambition, he fell in his turn under the hand of violence. The good Emperors made these gifts as well as the bad. Pertinax himself affirms that he gave to the soldiers 6,750 myriads of Drachms = $\$10,898,435$. And Marcus Aurelius gave at one time a benefaction amounting to nearly $\$500$ per man, which if given to the *Prætorian* guard only, must have amounted to nearly $\$8,000,000$.

The *Congiaria*, or gifts to the people, must often have equalled or exceeded those made to the army, though it is difficult to compute them when we know only the amount given per head, since we are uninformed as to the number of the population receiving them. Julius Cæsar, for example, besides giving each citizen ten *modii* of corn (about two and a half bushels), and ten pounds of oil (about seven pints), also gave to each four hundred *nummi* = $\$16.15$; and on another occasion seventy-five *drachms* each = $\$12.11$. Augustus gave frequent *congiaria*. Dr. Arbuthnot remarks, "Eusebius in his Chronicle writes that after the victory of Actium, there were reckoned of Roman citizens 4,160,000

and that, by the census made at the nativity of our Saviour, there were reckoned 93,700,000." He also says that the gifts to the people were distributed indiscriminately, "not omitting the very children, though the common custom was not to give to any under the age of eleven." As Augustus sometimes gave 250 *nummi*, if only half the number of citizens last named profited by his benevolence, it would have required more than \$470,000,000 to gratify them all. If only one in ten had been made a recipient of the bounty, it would have required more than ninety-five millions to have satisfied this number. Marcus Aurelius gave a *Congiarium* of eight *aurei*=\$32.30 to each citizen, which, Dio says, exceeded any given before. But his son Commodus gave a greater of 725 *denarii*=\$117. The total thus distributed must have been enormous. Septimius Severus gave at one time a *Congiarium*, which amounted in all to \$8,072,915; and Tiberius contributed for the relief of citizens who had suffered by a fire the sum of \$1,036,455. Caligula also paid a legacy of Tiberius amounting to \$1,816,405.

In all the preceding computations we have valued the talent as equivalent to £193.75 sterling, which is the valuation given for the Grecian talent by Arbuthnot. But there were several Grecian talents. The Attic, in most general use, according to the tables in Smith's Dictionary of Roman and Grecian Antiquities, was equivalent to £243.75 sterling; the Eubœie was equal to £338.525 sterling; and the Æginetan to £106.5 sterling. No other authority gives so small a valuation as Arbuthnot. If we assume the Attic talent to be intended in the instances above cited, and adopt Smith's value, all the sums given should be increased rather more than twenty-five per cent.

The foregoing facts are significant for our purpose, not because they show that there was great wealth in the Roman empire during the early centuries of our era, but because they demonstrate the existence of immense stores of wealth in the form of gold and silver, and especially of coined money. If we go farther east and consider the state of things in the centuries before our era, we shall encounter an abundance of facts no less significant. Attica was a small State geographically considered, hardly exceeding Delaware in extent of territory, but money seems to have

been very abundant there during the period of her prosperity. Gorgias, the orator, received from each of his scholars, one hundred *minæ*=\$2,018; and Isocrates had from his, one thousand *minæ*=\$20,180; Pamphilus, a painter, received from his apprentices a talent per annum=\$1,210. The Athenians paid to the inhabitants of Cos, one hundred talents for the picture of Venus by Apelles =\$121,000. Another, by the same master, representing Alexander holding the thunder, was sold to Ephesus for \$243,750. Amabœus, the harper, received a talent a day=\$1,210 for his performance in the theatre. Isocrates received from Nicocles, King of Cyprus, twenty talents=\$24,375 for one oration, and Demosthenes sold his silence for one day for the same sum, paid by Harpalus, the agent in Athens of Philip. Being detected, he was fined fifty talents for this=\$60,500. The salary of a Judge at Athens was one hundred and fifty talents=\$181,640; Pericles brought at one time into the public Treasury \$9,687,500. In these computations the value of the talent is taken as given by Smith.

Alexander's donatives to his army were frequent and large. At one time he gave each man 3,000 drachmæ=\$605; and at another to each horseman \$1,210. He made a free gift to the Thessalians of 2,000 talents=\$2,437,500, and left at his death a treasure of 100,000 talents=\$121,875,000. His yearly receipts from tribute, according to Herodotus, were 300,000 talents=\$365,625,000. Athenæus states that the crowns which were sent to this great monarch, as presents at his marriage, were estimated at the value of 15,000 talents=\$18,281,250. It is also said of him that he paid to Aristotle for his Natural History, the incredible sum of 800 talents=\$944,000. This, however, was not a personal reward, but was designed to defray the expenses of his research.

As examples illustrative of the extreme prodigality of the time, it may be mentioned that the footstool of Darius was valued at 3,000 talents=\$726,562; and that the scabbard of the sword of Mithridates, which was stolen, by Publius, was afterwards sold by him for 400 talents=\$484,375. More remarkable than this was the extravagance of Alexander in celebrating the funeral of his friend Hephaestion, which cost no less than 12,000 talents=

\$14,625,000. At the taking of Susæ and Persepolis, he secured, according to Quintus Curtius, no less than 150,000 talents of treasure = \$182,812,250. When the Roman commander Lucullus defeated Tigranes, King of Armenia, he found 8,000 talents in his Treasury = \$9,750,000. Ptolemy Philadelphus left at his death, according to Appian, 740,000 talents. As the Egyptian silver talent, according to Arbuthnot, was £258-6-8, this treasure amounted to the enormous sum of \$955,832,100, a sum the magnitude of which is so great that Boeckh suspects it to be the sum total of his revenues during his entire reign of thirty-six years.

No ruler of ancient or modern times has been so famed for wealth as Crœsus, king of Lydia, in the sixth century before our era. Herodotus tells extraordinary stories of the richness of his votive offerings presented at various sacred shrines in Greece. Among them was a statue of a woman of fine gold three cubits high ; another a golden lion, and still another a golden bowl as heavy as the lion. But the most remarkable of these gifts was a mass of gold bullion presented to the temple of Apollo at Delphi, consisting of one hundred and seventeen ingots six palms long, three palms wide, and one palm deep. The palm, according to Arbuthnot, was equivalent to 3.021875 British inches ; from which dimension we are able to compute the bulk and consequently the weight of this mass of precious metal. We thus ascertain its value to have been = \$12,227,620.*

If we turn to the history of the Jews we shall find evidence of the existence of the precious metals among that people in enormous quantities, not only in the early period of their independence, but long after they had been trodden down a dozen times under the heel of conquest. We read in the history of the Maccabees, that Seleucus Callinicus, King of Syria, having heard that there was a great treasure of gold and silver laid up in the temple at Jerusalem, sent thereupon his treasurer Heliodorus to seize it and

* It is here again assumed that the metal was pure. The gold of the early Greek and Roman coinage is known to have been without appreciable alloy, though it became debased in later times. Smith in his *Greek and Roman Antiquities*, gives the analysis of a Roman *uncia*, as showing but one third of one per cent. of impurity and that of a Greek *stater* as showing still less. A Persian *daric* seemed to contain about four per cent. of alloy. It is difficult to understand how these ancient coins should have been so pure, since native gold is never found unmixed, often largely, with other metals.

bring it to him. On the arrival of this officer the high priest, Onias, admitted that such a treasure actually existed, amounting to four hundred talents of silver and two hundred of gold, but pleaded that it was gathered for the relief of widows and fatherless children. He begged Heliodorus, therefore, to spare it. The ambassador persisted, however, in executing his orders, but his proceedings were suddenly and supernaturally arrested, and he was prevented from completing the spoliation. If Hebrew talents are here to be understood, as they ought to be, we must, according to Smith, value the silver talent at £450 and the gold talent at £7,200 ; which will bring the whole sum here in question up to \$8,100,000. Afterwards, when Antiochus Epiphanes captured the city and massacred many of its inhabitants, he carried out of the temple, according to the same authority, one thousand and eight hundred talents. If these were all of silver, the sum amounted to \$4,050,000. It was probably greater.

When Haman asked of Ahasuerus that the Jews might be put to death, he offered to the King forty thousand talents in lieu of the tribute the King had been accustomed to receive from that nation. This sum in silver talents amounts to \$90,000,000.

Sums like this, however, appear insignificant by the side of those which were gathered together in Jerusalem in the palmy days of the Israelitish monarchy under David and Solomon. The splendor of Solomon's establishment seems to have surpassed the pomp of the most ostentatious of later rulers. We find it said in the second book of Chronicles that " King Solomon made two hundred targets of beaten gold ; six hundred shekels of beaten gold went to one target. And three hundred shields made he of beaten gold ; three pounds of gold went to one shield. And the King put them in the house of the forest of Lebanon. Moreover, the King made a great throne of ivory and overlaid it with the best gold. And there were six steps to the throne with a footstool of gold which were fastened to the throne, and stays on each side of the sitting place, and two lions standing by the stays; and twelve lions stood there on the one side and on the other upon the six steps. There was not the like made in any kingdom.. And all the drinking vessels of King Solomon were of gold, and all the

vessels of the house of the forest of Lebanon were of pure gold ; none were of silver ; it was not anything accounted of in the days of Solomon." We can compute that the value of the targets and the shields was more than a million of dollars. The throne overlaid with gold, and the golden lions, and the golden drinking vessels and other vessels of the house of the forest of Lebanon must have cost many times this sum. The sacred record shows that this monarch was constantly in receipt of large quantities of gold from commercial enterprises or from the liberality of his friends and allies. We are told in I Kings, X., that " King Solomon made a navy of ships in Ezion-geber, which is beside Eloth, on the shore of the Red Sea, in the land of Edom. And Hiram sent in the navy his servants, shipmen that had knowledge of the sea, with the servants of Solomon. And they came to Ophir and fetched from thence gold, four hundred and twenty talents, and brought it to King Solomon." The same chapter tells us that earlier than this, " Hiram sent to the King six score talents of gold." And a little later it is said that the Queen of Sheba " gave to the King one hundred and twenty talents of gold, and of spices very great store and precious stones." These sums amounted to 660-talents of gold = \$37,519,680. It is stated, a little farther on, that " the weight of gold that came to Solomon in one year was six hundred three score and six talents of gold, besides that he had of the merchantmen and of the traffic of the spice merchants and of all the Kings of Arabia and of the governors of the country." If this statement does not refer to the receipts before mentioned (and it does not appear to do so), it shows that his acquisitions were equal in value in one year to seventy-five millions of dollars in gold alone.

But these details appear petty and insignificant, when brought into comparison with the accounts which we find in the Scriptures of the vast accumulations of the precious metals brought together by king David in preparation for the building of the temple at Jerusalem. In the twenty-second chapter of the first book of the Chronicles we find the charge given by David to his son Solomon, in which he says, " Behold, in my trouble, I have prepared for the house of the Lord, an hundred thousand talents of gold, and a thousand thousand talents of silver ; and of brass

and iron without weight, for it is in abundance ; timber also and stone have I prepared and thou mayest add thereto." In Chapter XXIX. of the same book King David further says : " Moreover because I have set my affection to the house of my God, I have of *mine own proper good*, of gold and silver which I have given to the house of my God, over and above all that I have prepared for the holy house, even three thousand talents of gold, of the gold of Ophir, and seven thousand talents of refined silver to overlay the walls of the houses withal; the gold for things of gold, and the silver for things of silver, and for all manner of work to be made by the hands of artificers." It is added : " Then the chief of the fathers and princes of the tribes of Israel, and the captains of thousands and hundreds, with the rulers of the King's work, offered willingly, and gave for the service of the house of God, of gold five thousand talents and ten thousand drams, and of silver ten thousand talents, and of brass eighteen thousand talents, and one hundred thousand talents of iron. And they with whom precious stones were found gave them to the treasure of the house of the Lord by the hand of Gehiel the Gershonite." From these passages we learn that the total amount of gold given for the temple was not less in value than \$9,030,320,946, of which \$6,139,600,146 was of gold and \$2,890,720,800 was of silver. These sums are so great as to surpass belief, and to excite a just suspicion that the text has undergone some alteration since the record was made.

In the first book of Esdras we find a passage which curiously corroborates the impressions gathered from the foregoing statements, as to the profusion with which the precious metals were lavished in the construction of the temple and in its furniture. In the year 605 B. C., Jerusalem was captured by Nebuchadnezzar, who carried off its people to Babylon, and with them the precious spoils of the temple. More than sixty years afterwards, Cyrus King of Persia, saw fit to liberate the captives, and to give order for the rebuilding of the temple at Jerusalem. He had also the generosity to restore to the returning Jews, such of the furniture of the temple as still remained in existence, and the story is told in the following words : " King Cyrus also brought forth the holy vessels which Nabuchadonosor had carried away

from Jerusalem, and had set up in his temple of idols. Now, when Cyrus, King of the Persians, had brought them forth, he delivered them to Mithridates, his treasurer ; and by him they were delivered to Sanabassar, the Governor of Judea, and this was the number of them, a thousand golden cups, and a thousand of silver ; censers of silver, twenty-nine ; vials of gold thirty, and of silver two thousand four hundred and ten, and a thousand other vessels. So all the vessels of gold and silver which were carried away were five thousand four hundred, three score and nine. These were brought back by Sanabassar, together with them of the captivity from Babylon to Jerusalem." It is difficult to imagine what could be the use of such a multitude of precious vessels.

But extraordinary as is the statement we here find as to the amount of the precious metals gathered by King David, it is surpassed by the story which Arbuthnot tells us on the authority of Atheneus, in regard to the wealth of Sardanapalus, King of Assyria, about eight centuries B. C. Having been besieged in his capital by Arbaces a Prince of the Medes, and despairing of deliverance, he made a funeral pile for himself and his family on which he heaped up the greater part of his wealth. Atheneus makes the value of the silver in this treasure to amount to one hundred millions of talents, and of the gold ten millions of talents. These, he says, were Babylonian talents, which, according to Smith (Dictionary of the Bible), have the value of \$40,930 for the gold, and \$2,046 for the silver. At these rates, the silver would have amounted to \$204,650,000,000, and the gold to \$409,300,000,000 ; in all \$613,950,000,000.

It is of course impossible to accept this statement literally. The sum here represented as having been gathered together in one spot, is nearly forty fold greater than the total production of gold and silver, as stated above, according to the best estimates we have been able to obtain throughout the entire world from the beginning of the Christian era down to the present time. The statement cannot be literally true but it is one among many historical evidences which prove that the wealth of the Persian Kings, and especially their treasures of gold and silver, were enormously great.

David flourished more than one thousand years before the Christian era. Solomon, his son, by whom the vast treasures which he had accumulated were applied to their intended purpose, ascended the throne, according to the commonly accepted chronology, B. C. 1015. Let us suppose that there is no error in the statement which we find in the Chronicles, of the amount of these treasures, and let us further suppose that there was at that time no other gold or silver in existence but that which was here gathered together, it is still impossible to admit that, in the time of Augustus Caesar, the world's stock of the precious metals should have dwindled down to the comparatively small sum of £358,-000,000, as assumed by Mr. Jacob. Even if during the thousand years between Solomon and Augustus, the supply had wholly ceased—a supposition totally incredible—it would not be possible to explain so enormous a falling off, upon any theory of waste by wear or accidental loss. It is common to compute the diminution of value of the precious metals in actual use, at one-tenth of one per cent. per annum. At that rate, the \$9,030,000,000 estimated to represent the value of the gold and silver accumulated by David would in a thousand years have lost less than two thirds of its value, and would still have been equal in amount to \$3,320,-000,000. But this is to suppose that these treasures were constantly in movement, whereas the purposes to which they were applied, and which we know were in great part decorative, were such as to insure their preservation unaltered for long periods of time. And as the sources from which these particular masses were drawn were then, and probably for very long after, actively exploited there can be no doubt that the annual waste was in great part compensated and probably more than compensated. It appears from the sacred narrative that Solomon and Hiram were constantly engaged in bringing gold from Ophir; and the Queen of Sheba seems to have been likewise well supplied, probably from the same source. Archæologists have been very greatly divided in opinion as to the geographical situation of this very rich gold-bearing region; but the theory which places it on the coast of Africa, south of Cape Guardafui seems most plausible; and it derives confirmation from the discoveries of recent years in the archæology of Egypt. But Ophir, though apparently

the chief source of supply of the precious metals in the flourishing era of the Jewish monarchy, was not by any means the only one. Croesus, the Lydian millionaire, is said to have obtained his gold from the sands of the river Pactolus. Strabo says that the mines of Carthagena in Spain, yielded to the Romans 25,000 drachmas *per diem*,—over \$5,000. Hannibal obtained from the Spanish mines 300 *pondo* daily of silver, which Arbuthnot puts at £968.75=\$4843.75. Asturias, Gallicia and Lusitania paid yearly 20,000 *pondo* of gold, equal, according to the same authority, to £645,833.33=\$3,229,166.65. A mine in Dalmatia is said to have yielded fifty *pondo* of gold daily=\$8,073. The silver mines of Laurium, in Attica were very productive; and though long abandoned they have been reopened in our own time and worked with profit. But though we thus know some of the sources from which, at and before the dawn of history, the precious metals were obtained, our knowledge of the subject is by no means complete. We know, nevertheless, enough to be assured that they were too numerous and too productive to have altogether and suddenly failed. But even if there had been no other than those just mentioned, without including Ophir or Pactolus, the annual supply would have amounted to \$8,000,000; and if this only had continued from the time of Solomon to the beginning of the Christian era, it would have yielded \$8,000,000,000, and would certainly have sufficed to compensate all possible loss of the pre-existing stock occasioned by abrasion or accident.

If we apply the same sort of reasoning to the much more doubtful—perhaps to a large extent fabulous—case of Sardanapalus, we shall find that, allowing for a waste of one-tenth of one per cent. per annum for eight hundred years, there must have remained in existence, in the time of Augustus, not less than \$275,770,000,000 of this vast stock. And even supposing that the story has been exaggerated a hundred fold in the telling, still on this extreme supposition, there ought to have been extant at the date last named, at least \$2,750,000,000 of the treasure of Sardanapalus, a sum in itself alone exceeding by sixty per cent. the estimate given by Jacob, of the value of the world's entire stock of the precious metals in the time of Augustus.

Now, if we suppose the treasure of Sardanapalus to have been

but one one-hundredth part of that reported by Athenseus, and that that of David is justly stated in the Bible; and if we suppose further that the annual supply continued to be at least equal to the annual waste throughout the long period preceding the rise of the Roman empire, there must have been in existence of these two accumulations alone, at the latter epoch, instead of the moderate sum of \$1,770,000,000 assumed by Jacob, not less than \$15,170,000,000. And supposing this had gone on depreciating at the rate of one-tenth of one per cent. per annum, for the last nineteen hundred years, there ought even now to remain of it not less than \$2,266,000,000, which is still thirty per cent. more than the estimate of Jacob for the beginning of this period.

We are compelled to regard, therefore, as entirely inadequate and untrustworthy, any modern estimates or conjectures as to the stock of the precious metals existing at the time of the discovery of America, or at any earlier date. Of the production since, we have estimates which, if not rigidly exact, are certainly fair approximations. During the three hundred and fifty-six years ending with 1848, we may gather from the statements above that this production amounted to about \$8,849,187,851. In computing the depreciation on this sum at the fraction per cent. above stated, we should calculate from the mean of the period—that is from the 178th year before 1848, or the 210th year before 1880, which will give us \$7,172,310,000, as the amount remaining in the year 1880 of the gold and silver produced from the date of the discovery of America until 1848. Since 1848 the production has been \$5,458,068,000; and the loss computed as before for the mean period of sixteen years before 1880, will give us as remaining in the last named year \$5,371,500,000. These two sums amount to \$12,543,810,000. Adding to them the \$2,266,000,000, above calculated to remain still in existence of the treasures gathered by two only of the monarchs of high antiquity, and ignoring any possible production for fifteen centuries after the birth of Jesus Christ, the stock of gold and silver now in existence ought to amount to at least \$14,809,870,000.

If we compare this with other estimates of the world's present stock of the precious metals, which we meet with here and there in public documents or works on statistics, we shall find that it

considerably exceeds them. Prof. Blake, in his report above referred to, puts the total production up to 1868, at \$14,010,700,000. The production since 1868 has amounted to \$2,145,012,000, which added to the foregoing gives a total of \$16,155,712,000. But no allowance has been made in this for loss or destruction; and if such loss be computed on the principles above explained, this total will be reduced to \$12,200,050,000.

In a document communicated to the Senate of the United States on the 12th April, 1876, by the Hon. C. F. Conant, Assistant Secretary of the Treasury, and prepared, it is understood by Mr. E. B. Elliott, Statistician to the Treasury Department, occurs the following statement: "The present stock of the precious metals in use in the world in coinage and the arts has been estimated by trustworthy investigators at from eleven thousand to thirteen thousand million dollars, say a mean of twelve thousand millions." This is in close accordance with the result obtained above by computation from the statement of Prof. Blake.*

These estimates fall nearly three thousand millions below that obtained above, yet that by no means properly represents the amount of the precious metals still probably existent of the accumulations made before the Christian era, or of the later production down to the discovery of America. It is not reasonable to suppose that any King of Israel, who, however illustrious he might have been for his personal achievements, or however dis-

* Since this paper was prepared, the following estimates have appeared. In the number for January, 1882, of *Bulletin*, a monthly publication devoted to monetary, financial and statistical science, p. 30, there is a table of the production of the precious metals since 1492, including also an assumed stock on hand at that date, of \$900,000,000, viz.: \$500,000,000 gold and \$400,000,000 silver, which shows a total of \$16,546,287,000, consisting of \$7,813,175,000 gold and \$9,233,112,000 silver. Of this it is assumed that there has been a loss by abrasion and destruction of \$780,000,000 gold, and \$1,000,000,000 silver, reducing the total stock remaining to \$6,533,175,000 gold, and \$8,233,112,000 silver, in all \$14,766,287,000. This is not very far from our own estimate in the text above.

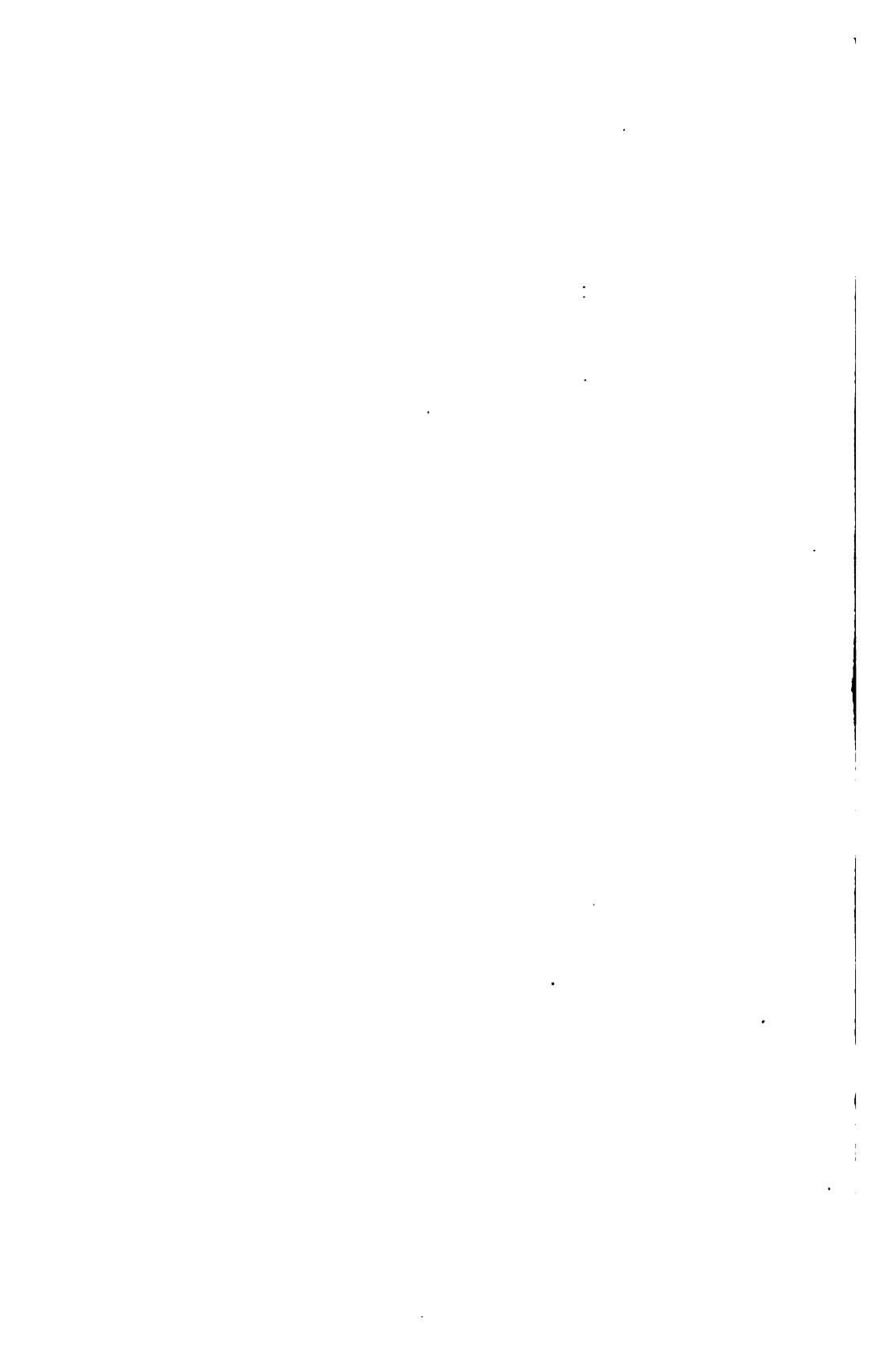
The third volume of the Proceedings of the International Monetary Convention of 1881, held in Paris, contains a table presented by Mr. Cernuschi, and said to have been prepared by Mr. R. B. Chapman, which makes the existing stock of gold, equal to 11,200,000 kilograms in weight, and that of silver equal to 179,200,000 kilograms. Pure gold is worth \$666 2-3 per kilogram, and pure silver at the French ratio of 15½ to 1 between the metals, is worth \$43 per kilogram. At these rates the value of the gold would be \$7,466,666,666, and that of the silver \$7,705,600,000; or of both together \$15,172,266,666. Supposing the metals to have the fineness of French and American coin, this value would be reduced to \$13,655,040,000.

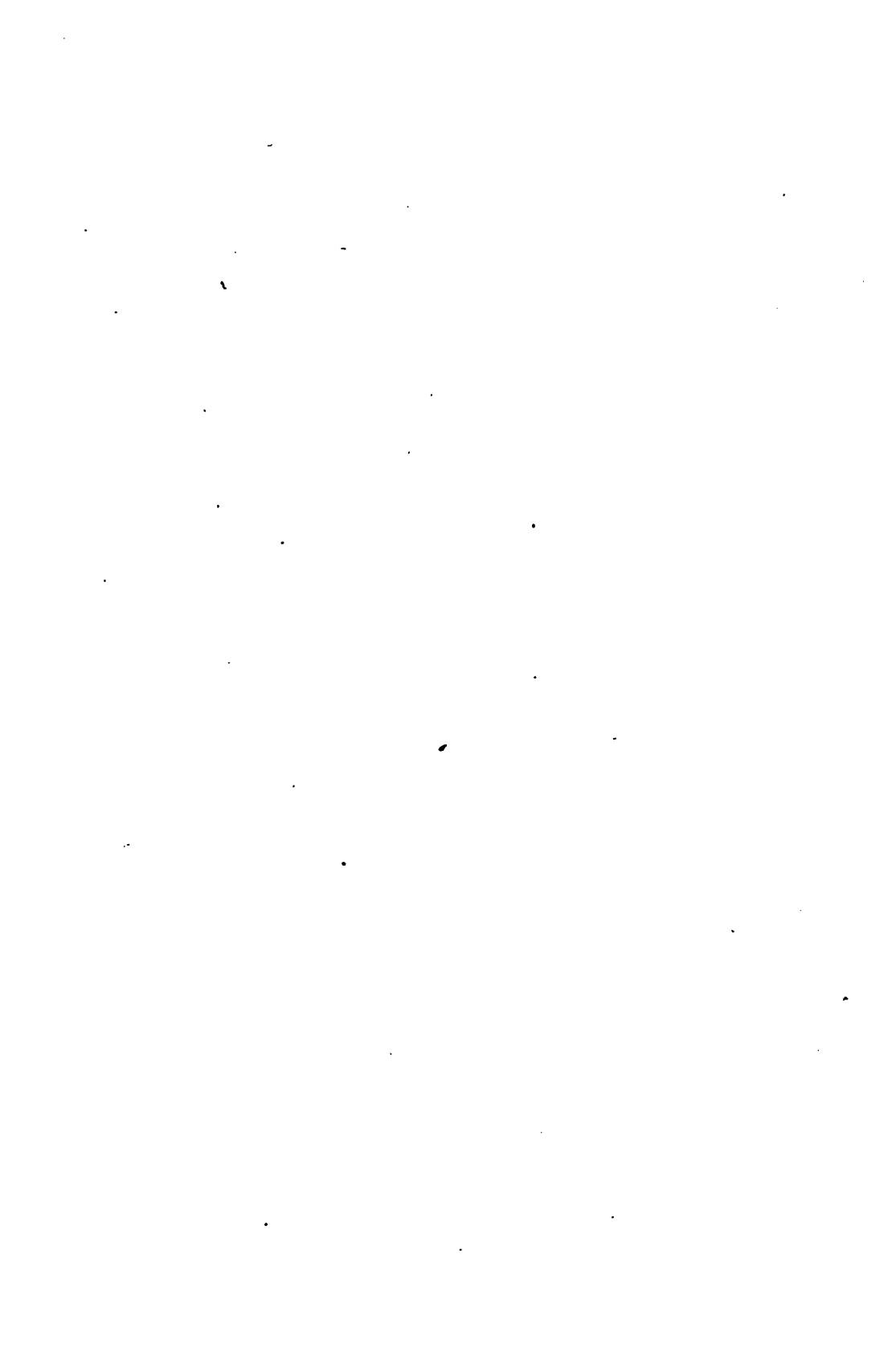
tinguished by the divine favor, was after all only the ruler of a petty nation, could be possessed of all the gold, or of even a tenth part of the gold in existence in his time. And magnificent as were the empires which successively rose and fell in the great Mesopotamian valley, it is inconceivable that even an Assyrian monarch could have monopolized the treasure of the world. Instead of supposing, as we have done above, that the world's stock of the precious metals amounted in the age of Augustus to \$15,000,000,000, it would be much more accordant with probability to place it as high as \$30,000,000,000 or even \$50,000,-000,000. Allowing, as before, for depreciation during the subsequent nineteen hundred years, there should still be existent of this treasure in 1880, on the first supposition, \$4,530,000,000, and on the second, \$7,550,000,000 ; which increased by the \$12,544,-000,000, above computed to remain from more recent production, would give for the present existing stock, in the first instance, \$17,076,000,000, or in the second \$20,094,000,000.

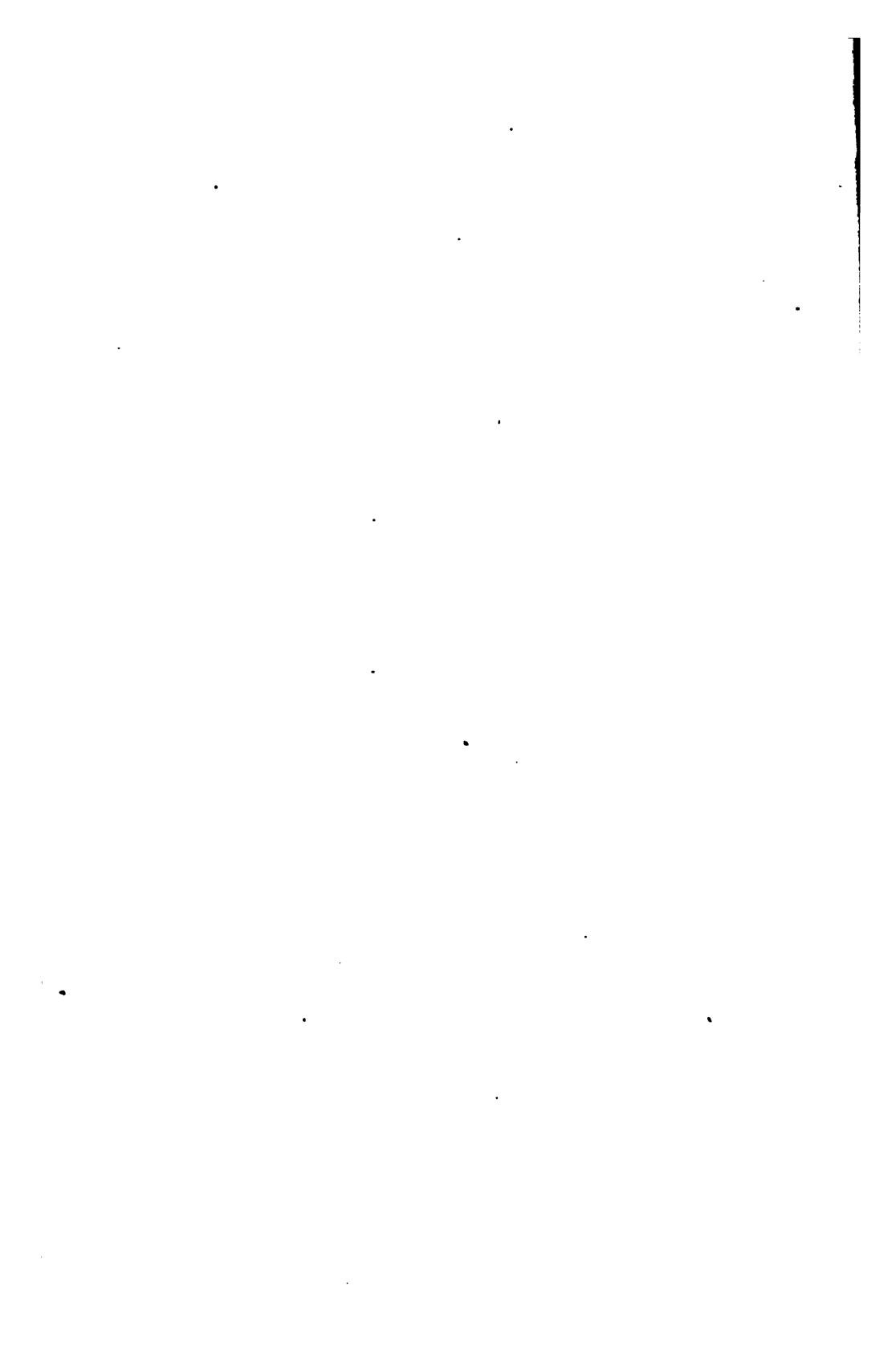
Nothing can be claimed for these speculations except that they furnish evidence for the belief that the commonly received estimates of the amount of gold and silver in existence in the various forms of coin, bullion, plate, jewelry and objects of decorative art or luxury, are far too low ; and therefore that the \$5,300,-000,000 which constitutes the total of the present coinage of the world, forms a much smaller fraction of the total stock than is commonly believed.

But the subject is one in which it would be idle to hope for exactness. Notwithstanding the seeming confidence with which statements of this kind are familiarly quoted, yet the most judicious minds hold them in very light esteem. The weight attached to them in such minds is very well illustrated in certain answers given by the late Mr. Walter Bagehot, Editor of the *Economist* of London, in his examination before the select Committee of the House of Commons, appointed in 1876, to inquire into the causes of the depreciation of silver. To the question by the chairman of the Committee : "Have you examined the statistics which are available to the public with regard to the aggregate amount of silver and gold in the various countries?" Mr. Bagehot replied, "I have examined them, but I regret to

say that I do not think they are of such value as to be made the basis of sound reasoning in such investigations as this. It appears to me that you neither know with certainty the present stock of silver in the world, nor are you able to estimate the probable augmentation of it; nor do you know the effect which any given percentage, say ten per cent., would have upon its value." On which the chairman proceeded to make the rather inferential inquiry, " You would question, after all the study you have given to the subject, both the accuracy and the real substantial value of figures that go into the aggregate amount of silver and gold in the world, and the proportion of the metals to each other," to which the witness rejoined with emphasis, " I do not believe they are worth the paper on which they are written. I do not consider that any one knows any thing about them, or has the means of knowing." In which opinion the present writer fully concurs.



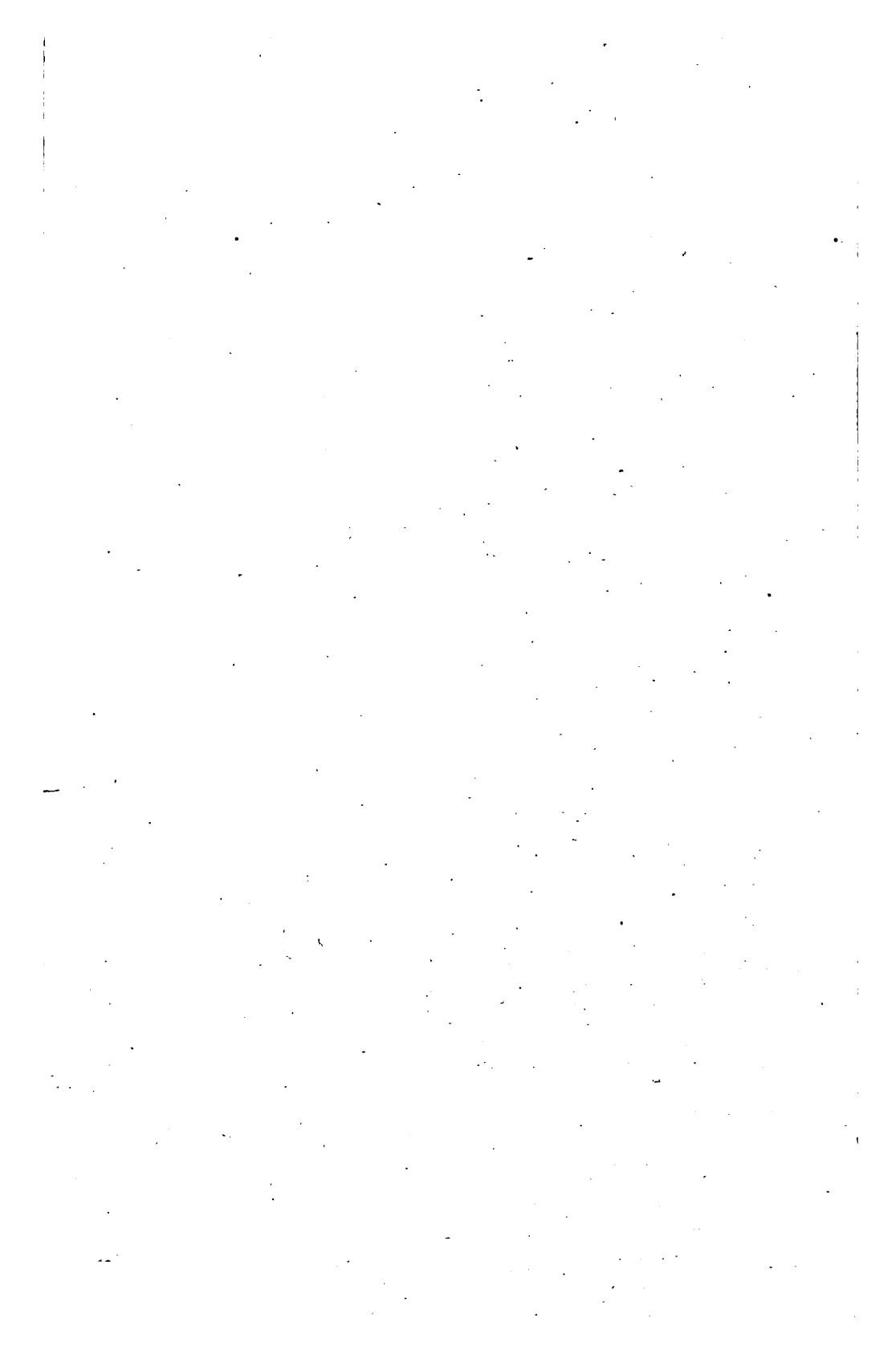




ON THE
RELATION TO THE PUBLIC WELFARE
OF
Changes in the Volume of Money,
AND ON
MONETARY STANDARDS,

BY
Dr. F. A. P. BARNARD.

FROM THE
PROCEEDINGS OF THE AMERICAN METROLOGICAL SOCIETY,
Vol. II.



(15)

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ON THE

RELATION TO THE PUBLIC WELFARE

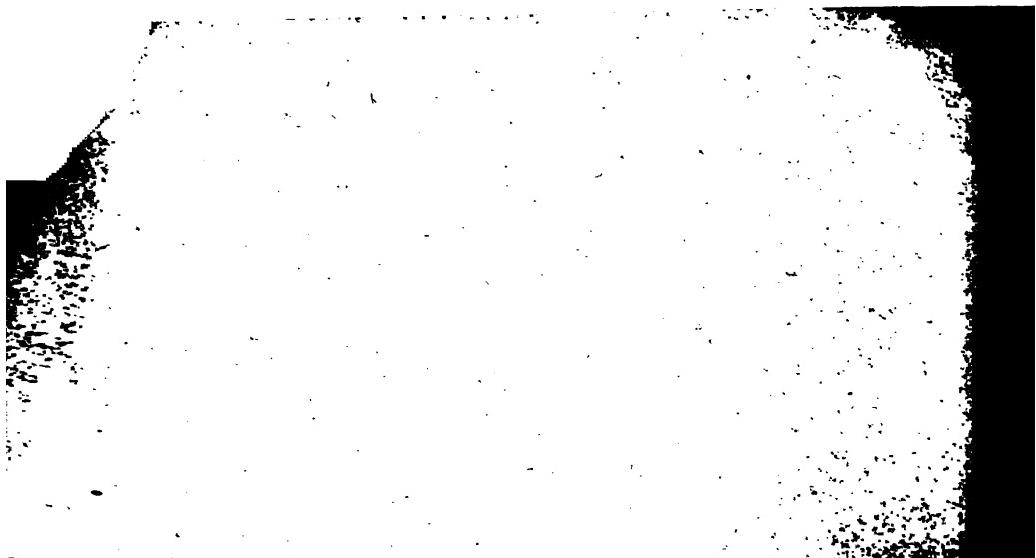
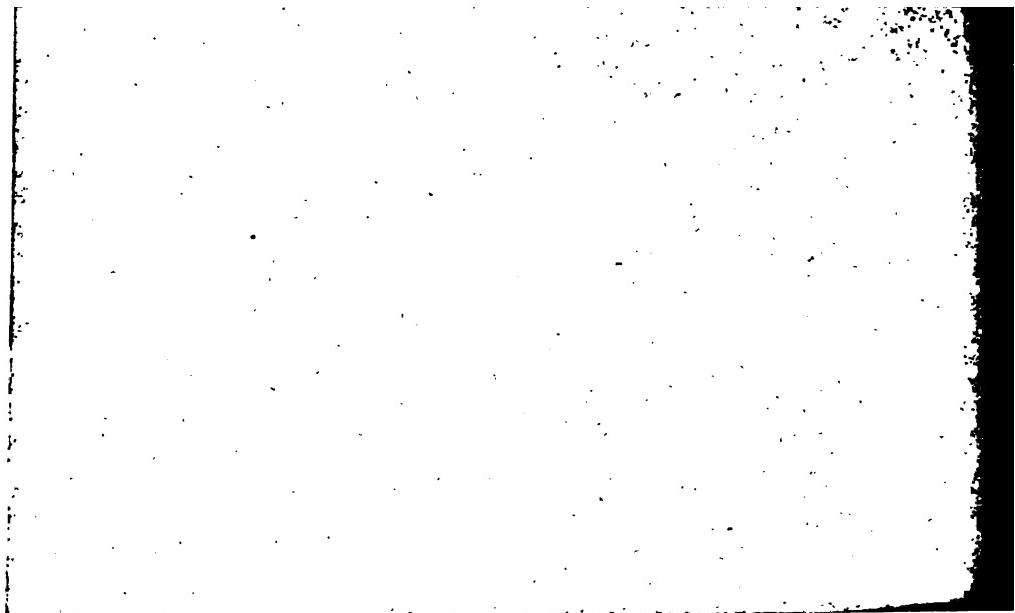
OF

ERRATUM.

On page 209, line 14, the word COIN should read CORN.

MONETARY STANDARDS.

By DR. F. A. P. BARNARD.



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ON THE

RELATION TO THE PUBLIC WELFARE

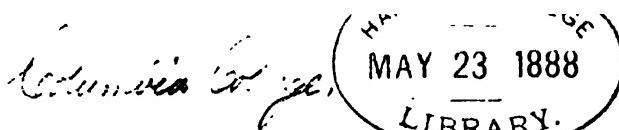
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ON THE RELATION TO THE PUBLIC WELFARE OF
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AND ON MONETARY STANDARDS.

During the past eight or ten years the world has been filled with a great outcry against the stupendous wrong said to have been done to the human race by the financial measures adopted by certain governments, involving what is commonly called "the demonetization of silver." The authors of those measures, and all others who have maintained their wisdom, have been denounced sometimes in terms of bitter vituperation, as designing men deliberately aiming to build up the fortunes of the wealthy few at the expense of the suffering many ; and at other times in words of contemptuous pity, as the weak victims of a false philosophy by which they are misled to their own delusion and to the grave injury of their fellow men. It never seems to occur to the authors of these intemperate expressions that they are perhaps themselves under the influence of some slight hallucination which vitiates in a degree the clearness of their vision. The confidence with which they utter their judgments, is like that of the old prophets, who prefaced all their announcements with the unanswerable declaration, "Thus saith the Lord." They speak in the absolute tone of men having authority. They disdain the language of hypothesis or conjecture. What they assert they assume to know. Those who differ from them, on the other hand, they treat as men without knowledge altogether ; men who put forward their own idle fancies instead of facts, and who live in a constant atmosphere of unreality. Regarding them in this light, they habitually speak of them as men without any proper acquaintance with the affairs of actual life, as unpractical men, or *doctrinaires*. This word *doctrinaire* involves a whole encyclopædia of contemptuous meaning. It denotes a visionary, a pure theorist, a Utopian philosopher, whose notions, however correct or just they might be in some imaginary or impossible world, must be necessarily absurd and wrong in that particular and imperfect world in which it is our destiny to live.

Now there is good reason to believe that the truth is directly the reverse of what is here represented, and that these very oracular wiseacres are themselves the *doctrinaires*. We find them, for example, continually taking for granted certain propositions in regard to the effect upon the welfare of the masses of the people, of changes in the volume of the currency, and making these assumptions the basis of conclusions of a most sweeping character, when a very cursory examination of the actual facts of observation concerned in the question, will show the propositions themselves to be without substantial foundation, and to be mere fancies conceived in the imaginations of their authors to serve the purposes of their argument.

The argument in the present case is something like the following : The demonetization of silver has diminished the amount of real money in the world by one-half. The consequence has been a universal fall of prices, and the consequence of a general fall of prices is invariably wide-spread suffering. Silver itself being reduced to a commodity of commerce, falls in price along with other things, and with its fall an immense amount of wealth is wantonly annihilated. And all this mischief has been done at the instigation of unprincipled men, who have managed to control the counsels of governments for the promotion of their selfish ends, to the disregard of the general good, and the great injury of the honest citizen. These assertions are not made in regard to the acts of distant governments and to the experience of other peoples, but in respect, especially, to the legislation of the American Congress in 1873 and 1874, and the influences which induced that legislation, and to the stagnation of business and the consequent sufferings of the industrial classes in our country during the last six or seven years. Now that this suffering has been great there can be no doubt, and that we have passed through a period of comparatively low prices is also true : but that these facts are traceable in any manner to the legislation of Congress affecting silver, is not only not certain, but is demonstrably false. For the humanitarian philosophers who call upon us to weep over the universal wretchedness which has been brought down upon our countrymen by the demonetization of silver in 1873, are compelled by their own principles to argue

that the immediate effect of that financial measure, in virtue of which it drew after it the imputed disastrous consequences, was to diminish enormously the volume of the money of the United States. Prices fell, they assert, because the volume of money was reduced. The volume of money was reduced by withdrawing from silver the character of money. The people suffered from the fall of prices, and thus the demonetization of silver was the cause of the suffering.

Now, had it been the case that any considerable proportion of the circulating medium of the United States had been deprived of the character of money by the legislation of 1873 and 1874, the soundness of this reasoning would not necessarily follow, though the fact itself would be a fact in harmony with the reasoning; but such was not the case. For, the simple truth is, that, for nearly half century before that legislation took place, we had had no full legal tender silver in circulation at all. The only form of silver coin, which had been struck since 1853 having this legal tender character, was the silver dollar, and for sixty years there had not been ten million silver dollars struck in all. Moreover, the legislation referred to, so far from having been brought about by dishonest influences exercised by interested men, was due to the advice of the finance officers of the government itself; for the very sufficient reason that as prices then stood, silver bullion uncoined was worth two or three per cent more than the same metal coined into dollars; so that all the dollars issued from the mint were immediately exported, or melted up and converted into bullion again.

While this state of things lasted, and it did last for two or three years, there was no clamor about demonetization; but when in 1876 the price of silver fell rapidly in the London market, the explosion was sudden and violent. The discussion of the dollar complicated itself at once with the question of the resumption of specie payments in the United States, for which, by an act of Congress passed in 1875, the 1st of January, 1879, had been fixed as the definite day; and it was further embarrassed by the up-springing of a powerful party bent on resisting all resumption, and on maintaining a currency exclusively of paper forever. The success of this party, and it is a party which at times has appeared

truly formidable, would have deprived the silver question, and the gold question no less, of all interest so far as this country is concerned. But to a certain extent the same motives actuated alike the champions of *fiat* money and the advocates of the remonetization of silver. No earnest desire for the reappearance of silver manifested itself until silver became cheap, and no fiat-money party could be possible if the cheapness of fiat money were not sure to be phenomenal. If all commercial exchanges were conducted now, as they appear to have been in primitive times, on the principle of payment on delivery, neither cheap silver nor depreciated paper would be tolerated for a moment by either buyer or seller. In the actual state of the world it happens, however, that into many of the transactions of commerce or of ordinary life there enters the element of time; that is to say, for benefits received the receiver engages to return an equivalent at a later day. And this equivalent is money. Anything that makes money cheap—that is, diminishes its value relatively to commodities—is favorable to the debtor; and therefore the most vociferous clamorers for fiat money are always found among the debtor class. For a similar reason the remonetization of silver when silver is cheap, as at present, finds favor with those who were so indifferent to its demonetization when it was dear, as in 1873, that they allowed this abominable measure, as they style it, to be at that time carried without lifting a finger to oppose it. Now, as there is hardly a man in the community who has not at one time or another some outstanding liability pressing upon him, the debtor class is necessarily very large. But for the same reason the creditor class is large also; and most men are at once debtors and creditors. And hence the assumption which is so often made in the discussion of this question, that the community is composed of two distinctly definable classes of people having interests diametrically antagonistic to each other, is untenable; but, supposing it true, the further assumption that these two classes are not equally entitled to the sympathies of statesmen and the protecting care of the State, is more indefensible still. Yet we hear it constantly represented that any measure which may by possibility bear heavily though only temporarily on the so-called debtor class—or perhaps we may rather

say, any measure which does not distinctly tend to lighten the burdens of that class at the expense of the other—is incapable of justification, if not utterly reprehensible; while on the other hand a measure from which the creditor class suffers is regarded, in the same quarters, with a complacency which no attempt is made to disguise. This peculiarity may perhaps be accounted for by considering that in the vulgar mind the creditor class appear to be confounded with the rich, the capitalists, the “bloated bond-holders,” and all others whose sin it is to have been successful in business ; while the debtor class are supposed to be the needy, the hard-working poor, the small farmers, farm-laborers, mechanics, and manufacturing operatives. And these last in every community, are, no doubt, largely in the majority. Unfortunately also this majority are only too much predisposed to think ill both of the designs and of the actions of those who have been more favored by fortune than themselves. But the truth is that the classification above indicated is totally erroneous and false. It is an impossibility to divide the people into two such well-defined and opposite classes. Scarcely can an individual anywhere be found who is not in one relation or another, at the same time a debtor and a creditor. But admitting as just the arbitrary line of division above assumed, the position of the two classes described should, for the purposes of this argument, be directly reversed ; since in a comprehensive view of the conditions affecting the question, if any class is, in this country, especially the creditor class, it is the poor. This is so because, in defining this class, it is an error to regard it as limited to such as are looking for the receipt of dues long outstanding ; it embraces, on the contrary, all that immensely greater number who have debts becoming due to them every day, from the labor of their hands or the exercise of their skill in every department of industry ; while on the other side we have as debtors all the banks, on account of their issues of promissory notes and on account of the vast deposits of the money of their customers in their vaults ; all of the great joint-stock corporations engaged in manufacture or transportation, as toward the holders of their bonds and stocks, and toward the innumerable company of their employés ; all the great importing merchants and jobbers to the bankers who discount their bills and other

securities, and to the mariners who navigate their vessels ; and finally most municipal corporations and the State itself.

To enumerate more particularly, we may set on the creditor side—

1. Men and women who maintain themselves by their daily labor, or who, in common language, "work for wages."
2. Persons in professional life depending on fixed salaries, including clergymen, teachers of all grades, and the entire civil, military and naval service.

3. Employés in mercantile houses, banks and business offices of all kinds.

4. Annuitants, embracing the holders of all descriptions of stocks and bonds, including those of the United States, of the State governments and of municipal corporations, as well as those of private banking, railroad, mining and manufacturing companies ; in one or another of which forms, the small savings of multitudes of individuals in narrow circumstances have been invested in the hope of security.

5. Merchants, whether in the wholesale or the retail trade, embracing among the latter a countless number of small shopkeepers all over the country.

6. Mechanics in every branch of handicraft, who usually keep running accounts with their customers.

7. Banks, as holders of commercial paper, and other forms of bills receivable.

8. The State itself, as the receiver of taxes.

On the debtor side we may enumerate—

1. The State, again, to the entire amount of the annual appropriations made for the support of the government.
2. Banks to the amount of their stocks, deposits and circulation.
3. Borrowers on ordinary commercial paper, or on mortgage of real estate.
4. Small tradesmen toward the wholesale merchants, and the customers of both on open account.

5. Holders of real estate on lease, whether in town or country.
6. Purchasers of stock, farms, implements, tools, &c., on credit.
7. Employers of all classes toward those dependent on them.
8. The whole people as tax payers.

The very attempt to make an enumeration like this, proves at once the impossibility of drawing such a line of demarcation among the people. There is no class of the community which as a whole can be placed with propriety on either side of the line. And though it may be admitted that there are individuals in every class whose temporary interests may sometimes be more on one side than on the other, yet, as has been already remarked, there is scarcely one who is not in certain of his relations at once a creditor and a debtor.

Now if we consider the effect of the rise and fall in the value or purchasing power of money, we shall see clearly enough that it cannot possibly be such as we are commonly asked to believe. A rise in purchasing power which may be occasioned by a contraction of the currency, if we suppose it to affect the creditor favorably and the debtor prejudicially, affects every individual more or less in both ways at the same time. But how is this effect produced?

Its first manifestation appears in a general fall of prices. The immediate result is a reduction in the cost of living which is felt beneficially by all who maintain themselves by the labor of their hands, and all who depend on salaries or fixed annuities. For wages and salaries do not fall synchronously with prices; but their reduction, when it comes, follows a long time after, and does not come at all unless the rule of low prices is at length permanently established. Even when it comes, it is only proportioned to the fall of prices; so that the income, though reduced, stands once more to the cost of living in the same relation as before, and the individual in the end neither gains nor loses. Mr. Bagehot illustrates this point admirably in the following remarks extracted from his book on *Lombard Street*:

“ In 1867 and the first half of 1868, corn was dear, as the following figures show : [Here follows a table showing the average monthly price of wheat from December 1866 to July 1868.]

"From that time it fell, and it was very cheap during the whole of 1869 and 1870. The effect of this cheapness is great in every department of industry [the author is writing contemporaneously] the working classes, having cheaper food, need to spend less on that food and have more to spend on other things. In consequence there is a gentle augmentation of demand through almost all departments of trade. And this almost always causes a great augmentation in what may be called the instrumental trade,—that is, in the trades which deal in machines and instruments used in many branches of commerce, and in the materials for such. Take for instance, the iron trades: [Here follows a comparison of the exportation of iron in the years 1869 to 1870 with the same in the years 1867 and 1868.]

"That is to say cheap coin (in England), operating throughout the world, created new demand for many kinds of articles—the production of a large number of such articles being aided by iron in some of its many forms—iron to that extent was exported, and the effect is cumulative. The manufacture of iron being stimulated, all persons concerned in that great manufacture are well off, have more to spend, and by spending it encourage other branches of manufacture, which again propagate the demand; they receive and so encourage industries in a third degree dependent and removed."

Nothing could make it more clearly evident than this, how true it is that the fall of prices—that is to say, the rise in the value of money in reference to commodities—is an unqualified blessing to the great majority of the population whom it affects, that majority on whom falls the heaviest portion of the world's daily toil.

Among other classes who may be benefited by the fall, may be named merchants and handi-craftsmen, provided they can collect their dues; but on the other hand they are often largely losers by their defaulting debtors. The same may be said of banks, and of all lenders of money. It is a familiar experience to hear banks and money lenders denounced with bitterness by demagogues, who are accustomed to treat the possession of accumulated capital as a wrong to mankind. Yet it is only by such

accumulations that business enterprise can be encouraged, production stimulated, and the industrial activity of the world kept alive. A widely prevalent, perhaps nearly universal, but entirely mistaken, belief appears to exist that any considerable increase of the money of a country brings necessarily with it blessings in like proportion ; or that, in difficult crises, such an increase suddenly made may save a people from disaster. Many even now believe that the unauthorized re-issue of between twenty and thirty millions of retired greenbacks made by Secretary Richardson in the winter of 1873-4, prevented the heavy blow which then fell upon the prosperity of the country from resulting in a ruinous crash. But if such was really its effect, it was because it was a contribution to swell those masses of accumulated capital which are so frequently made the subject of popular denunciation. Applied to strengthen those masses, and so to maintain and forward the great operations of commerce, manufacture, and industrial enterprise generally, which were then in danger, it benefitted the whole country by keeping the entire machine in action. Had it been distributed *pro rata* among all the people, in accordance with communistic views of justice, it would have enriched each individual only by a small fraction of a dollar and would have been productive of no sensible benefit whatever.

But banks and money lenders are the instrumentalities by means of which the capital of the country is put where it will do the most good, by promoting with effect that general prosperity in which every citizen, whether rich or poor, is equally participant. To decry banks and money lenders is to denounce the very fountain-springs of national wealth and national progress. We had once a Chief Magistrate who was so little cognizant of this truth, as to be willing to contribute by his voice and the influence of his high station to foster the prejudices of the vulgar against this class of institutions; and who when as a consequence of his extraordinary financial measures, the commercial world seemed about to be overwhelmed in a general ruin, expressed his satisfaction with the result, in the remarkable declaration that "men who trade on borrowed money ought to break." Such was not the opinion of that eminent economist, the late Walter Bagehot, one of the highest authorities on finance that England has produced.

This distinguished writer, in his work on *Lombard Street*, shows on the contrary very clearly, that the most advantageous mode of prosecuting great commercial enterprises is to "trade on borrowed capital;" and without borrowing, in the present age, the world's large commerce cannot be carried on. Moreover, in Lombard Street, and probably in Wall Street, not only do merchants trade on borrowed capital, but money-lenders lend on borrowed capital—that is to say, they discount commercial bills with money which they have themselves borrowed from the banks, profiting only by such differences of interest as they can secure. These bill-brokers, if when the value of money rises, their customers default, must themselves become defaulters to the banks; and thus brokers and banks, though equally in the class of creditors, are liable to be sufferers together through a change which is commonly supposed to be especially favorable to their class.

The State, in the character of a creditor, is favorably affected by the rise in the value of money, because it can make its contracts for supplies and constructions on more advantageous terms, and thus make its revenues go further. It is enabled also to reduce taxes, and thus, though that result is not immediate, in the end to relieve to a sensible degree the burdens of all the people.

On the debtor side, among the heaviest sufferers, though commonly estimated to be gainers in consequence of the rise in the value of money, are banks, which finding their deposits drawn down, are obliged to contract their loans and reduce their circulation, and thus through the consequent diminution of their business find their profits falling off, while they are further liable to losses by default on the part of borrowers. The State as a debtor, having its revenues largely dependent upon commerce, may find its receipts falling below the estimates; but against this is to be reckoned the offset on the part of the people that the amount drawn from them in taxes is diminished by the whole amount of the deficiency.

The class of debtors, however, who suffer most, are undoubtedly those who by misfortune or losses have become burdened with liabilities which they could not avert; those who by imprudence have mortgaged their property for loans on hopes or

prospects which have proved fallacious, and those who have embarked in rash speculations or doubtful enterprises which have culminated in disaster. All these cannot equally command our sympathy. The unfortunate are not necessarily unfortunate because of the change in the value of the money. Misfortunes happen as well during a state of general prosperity as in one of general depression. Speculators and adventurers enter upon their schemes in a spirit of gambling, and with their eyes open. They know the hazards they incur, and their disasters are rarely undeserved. The merely imprudent are certainly entitled to commiseration; but it does not follow that on their account the whole system of public economy should be subverted. It is understood that, among the farmers of the West, many, perhaps a majority have encumbered their lands with mortgages either at the time of original purchase, or later in order to raise money to enable them to enlarge the scale of their agricultural operations. The interests of this class naturally led them to oppose the resumption of specie payments; since with legal tender currency, thirty per cent. or more below the money of the world in value, they could by the use of it, more easily lift their mortgages. Those, moreover, of the same agricultural class who were not thus burdened, went naturally with them, because resumption meant a fall in the prices of farm products. It is thus easy to account for the strength of the Greenback Party in the West, and for the intensity of the struggle through which it was necessary for the Nation to pass in order to secure resumption. And when resistance to the will of the people on this subject began to grow hopeless, we have here likewise an explanation of the power which the silver remonetization movement so suddenly developed; since, could a bill like Mr. Bland's have been forced through Congress, resumption would have been but a half way resumption, and debts might still have been scaled to the extent of fifteen per cent. instead of thirty.

In what precedes it has been attempted to sketch what are the effects to be naturally expected as results of a rise in the value, or an increase in the purchasing power of money. In the opposite case of a fall in value, we may reasonably look to see these effects reversed. And this is what actually takes place. As the

increasing value of money betrays itself in a general fall of prices, so a diminution in the same value is made similarly evident by a corresponding rise of prices. Mr. Bagehot has pointed out how these changes are sure to alternate, and how after a period of depression and low prices, a period of high prices is sure to follow, and has in the following passages extracted from his *Lombard Street*, traced intelligently the consequences of such a reaction:

"A general rise of prices is a rise only in name; whatever any one gains on the article which he has to sell, he loses on the article which he has to buy, and so he is just where he was. The only real effects of a general rise of prices are these: first, it straitens people of fixed incomes who suffer as purchasers, but who have no gain to correspond; and secondly, it gives an extra profit to fixed capital *created before the rise happened*. Here the sellers gain, but without any equivalent loss as buyers. Thirdly, this gain on fixed capital is greater in what may be called the industrial "implements," such as coal and iron. These are wanted in all industries, and in any general rise of prices they are sure to rise much more than other things. Everybody wants them; the supply cannot be rapidly augmented, and therefore their price rises very quickly. *But to the country as a whole, the general rise of prices is no benefit at all; it is simply a change of nomenclature for an identical relative value of the same commodities.* Nevertheless, most people are happier for it; they think they are getting richer though they are not. And as the rise does not happen on all articles at the same moment, those to whom it first comes gain really; and as at first every one believes that he will gain when his own article is rising, a buoyant cheerfulness overflows the mercantile world."

In these two last sentences we have the true secret of the popular delusion which confounds a general rise of prices with personal prosperity. It is only a delusion, for the only benefit that comes with the rise is, as is here shown, only partial and momentary, or as the same author expresses it further on, "this prosperity is precarious as far as it is real, and transitory in so far as it is fictitious." Moreover, what Mr. Bagehot says of the hardship of a general rise of prices to persons of fixed incomes,

may be extended to the entire class of those who work for wages. As in a time of falling prices, wages are the last to fall, so in a time of rising prices they are the last to rise; and in the rise they even drag much farther behind than in the fall. It is natural that it should be so ; for as the interest of employers is on the side of low wages and is opposed to high wages, they are more ready to act when they can gain by action, than when they lose.

Contrary, therefore, to what is continually inculcated upon us by a certain class of writers on this subject, the greatest good of the greatest number is far from being prejudiced by a rise in the value of money or enhanced by a fall in the same value. Further than that, there are evils inseparable from the latter event, which often affect profoundly the general welfare. In the first place, as the value of money falls because there is much of it in the market, there results a great facility and therefore a great increase in borrowing, and this leads again to an excess of production, or what is called over trading. Mr. Bagehot describes this process as follows :

" Such a period naturally excites the sanguine and the ardent ; they fancy that the prosperity they see will last always, that it is only the beginning of a greater prosperity. They altogether over estimate the demand for the article they deal in, or the work they do. They all in their degree—and the ablest and cleverest the most—work much more than they should, and trade far above their means. Every great crisis reveals the excessive speculations of many houses which no one before suspected, and which probably had not begun or had not carried very far those speculations, till they were tempted by the daily rise of prices and the surrounding fever."

The writer goes on to point out that the case is made worse because the fever often extends to saving persons who, though not bold enough to project operations of their own, become seized with what he calls "an investing mania ;" that is, they buy stocks in bubble companies "just as they did in the time of the South Sea mania." He adds: "At the very beginning of adversity, the shares in the companies created to feed the mania are discovered to be worthless; down they all go, and with them much of credit."

Another evil is that, "the good times too of high prices almost always engender much fraud. All people are most credulous when they are most happy; and when much money has been made, when some people are really making it, there is a happy opportunity for ingenious mendacity. Almost every thing will be believed for a little while; and long before discovery, the worst and most adroit deceivers are geographically or legally beyond the reach of punishment."

These considerations suggest to us the propriety of discounting very largely upon the assertions of those who are perpetually haranguing us upon the disastrous results to the prosperity of our country of the reduction in the volume of money among us in consequence of the demonetization of silver. It was predicted to us that the consequence would be an extraordinary fall of prices in every branch of trade. In fact, it has been asserted and is perhaps proved by evidence derived from reports of the state of the markets in New York, from time to time, that a great fall did actually take place between 1876 and 1879; and this has been attributed to the remonetization of silver in 1873, no less than to the threatened resumption of specie payments fixed by law for the first of January of the year last named. The second of these causes was a known and real one. Without defeating resumption, its operation could not have been averted, nor was it desirable that it should be. The effort to defeat resumption was accordingly prosecuted with an earnestness which, in parts of the country, approached almost to frenzy. It happily failed and prices accordingly went down. But there were other causes besides resumption conspiring to the same result, chief of which was the complete stagnation of industrial activity, growing out of the almost universal loss of confidence between business men. Moreover, it is the tendency of all movements in the economical and social as well as in the physical world, to pass the point of equilibrium; and hence it is quite intelligible that the temporary fall of prices may have been greater than the mere appreciation in the value of the greenback currency would have justified. But when resumption had been once accomplished, confidence returned with it, restoring health to industry, and manifesting its salutary influence by raising prices again to their just level.

From what has been said it is evident that, so far as the general welfare of the community is concerned, neither a rise in the value of money, nor a fall in the value of money can be regarded as a benefit; for though in the former case, numbers are deluded with the idea that because they are selling at high prices they are better off, and in the latter they are alarmed lest the fall of the prices of their commodities will make them poor, yet, taking the community through, both hopes and fears are equally unfounded; and when matters adjust themselves to the new plane of prices, everything goes on as it did before the change, and no one is either worse off or better. But during the progress of the change more are losers than gainers, whether the tendency be up or down; and hence the condition of the highest prosperity which a nation can enjoy is that in which prices remain stationary. In such a state of things, business steadily and healthfully grows, and the volume of the currency should grow in no greater proportion, nor any less. But this growth will in the nature of the case be gradual, and it cannot be stimulated beyond its natural and healthful development by sudden and vast accessions to loanable capital without provoking hazardous speculations and engendering wild and reckless schemes of which the results cannot fail to be deplorable.

The dependence of the prosperity of a people upon the steadiness of the volume of money and its gradual and uniform increase in due proportion to the growth of the operations of industry, is well set forth in the report of the Congressional Monetary Commission of 1876, presented by the chairman, Senator John P. Jones, at the session of the forty-fourth congress, as follows:

“ It is in a volume of money keeping even pace with advancing population and commerce, and in the resulting steadiness of prices, that the wholesome nutriment of a healthy vitality is to be found. The highest moral, intellectual and material development of nations is promoted by the use of money unchanging in its value. That kind of money, instead of being the oppressor is one of the great instrumentalities of commerce and industry. It is as profitless as idle machinery, while it is idle; differing from all other useful agencies, it cannot benefit its owner except when

he parts with it. It is only under steady prices that the production of wealth can reach its permanent maximum and that its equitable distribution is possible. Steadiness in prices increases labor to all and exacts labor from all. It gives security to credit, and stability and prosperity to business. It encourages large enterprises requiring time for their development, and crowns with success well matured and carefully executed plans. It discourages purely speculative ventures, and especially those based upon disaster. It encourages actual transactions rather than gambling on future prices. It metes out justice to both debtor and creditor, and secures credit to those who deserve it. It prevents capital from oppressing labor, and labor from oppressing capital, and secures to each its just share of the fruits of industry and enterprise. It secures a reasonable interest for its use to the lenders of money, and a just share in the profits of production to the borrower. It keeps up the distinction between a mortgage and a deed. It insures a moderate competence to the many, rather than colossal fortunes to the few at the expense of the many."

All these blessings unquestionably attend the steadiness of an unvarying scale of prices both of commodities and of labor in any community; but it is not alone by the preservation of a uniform volume of currency, or of a volume in constant proportion to population and wealth, that such a permanently uniform scale of prices can be maintained. Other causes besides the volume of the currency continually disturb it. We have seen, for example, how in consequence of a bad harvest, the price of wheat may be raised in England; and how the disturbance of the scale at this one point may propagate a disturbance through the whole range of prices. While it is well, therefore, to do nothing which may suddenly and largely affect the volume of the currency, we need not flatter ourselves that this precaution will suffice to avert those occasional periods of stagnation which so many other causes are continually conspiring to bring to pass, when industry flags and prices fall, and there comes up from every side the lamentation over the hardness of the times.

To return to the condition of our country in 1876, when the downward tendency in prices above referred to began to be marked.

That tendency was inevitable, from the fact that the country was at the time in an entirely abnormal condition, a consequence of the terrible struggle through which we had so recently been compelled to pass for the preservation of the life of the nation. The precipitation upon us of that struggle compelled us suddenly to abandon the use of real money, and to replace it by a currency of no intrinsic value, maintained in circulation only by the force of law. The vast expenditures necessary for the prosecution of the war swelled enormously the volume of this artificial medium of exchange; the universal demand for provisions for the subsistence of the armies in the field raised rapidly and largely the prices of farm products; and the continual call for more and more of the material of war, stimulated all branches of mechanical industry to the highest point of production; while the diversion from the pursuits of peace of the most effective portion of the industrial population to meet the military exigencies of the time, produced its natural effect upon the rates of wages. The years of the war were years of extravagance and reckless adventure; the evil inheritance of the habits then engendered fell upon the years that followed; and under an outward appearance of prosperity which both surprised and deceived the people, sowed the seeds of that harvest of disaster which finally came in overwhelming shape in 1873. The depreciation of the currency was then fifteen per cent. and nominal prices were proportionally high. From that point we had an upward struggle to bring our legal tender notes up to the par to which the resumption act passed a little later, was destined inexorably to force them, and the fall of prices was a result wholly inevitable, without reference to any supposable effects of the demonetization of silver—if any such there were—conspiring to this result. It is true that, toward the end, this fall became somewhat greater than the necessary appreciation of greenbacks would have required; and it has been accordingly argued that silver had not fallen in reference to commodities, but that gold had risen. Thus Mr. Weston quotes statements from the *New York Public*, in which it is affirmed that, between 1876 and 1879, the general fall in prices amounted to nineteen per cent., while the fall in premium on gold was only ten and a half per cent., which leaves

eight and a half per cent. apparently chargeable to the rise in the value of gold.* And further on he adds in reference to this :— “The rise in the value or purchasing power of gold, and the simultaneous approximation of the value of the greenback to the value of gold, are the upper and nether mill-stones which have ground debtors and mortgageors to powder.”† But this is only an example of the tendency already referred to, in all movements to pass the point of equilibrium. Prices fell lower than they ought to have fallen, and for the moment failed to be governed by the actual value of money. The proof of this is in the fact that they did not remain for an hour at this point of extreme depression. On the 1st of January, 1879, resumption became an accomplished fact, and the prostration of prices which the effort to resume had produced, had been carried to the extreme of possibility. If the effect had been permanent, it might have been fair to argue from it an actual increase in the value of gold as money. But no sooner had the uncertainty and apprehension which always existed in the public mind, so long as we continued to have no such thing as a standard of value in our business transactions, been removed by successful resumption, than the natural reaction took place at once, and prices began rapidly to rise. The director of the mint, in his annual report for the year 1879–80, furnishes a price table, which on this subject is highly instructive. This table gives the comparative prices of one hundred leading articles of domestic production exported from the United States for the years 1870, 1879 and 1880 up to June. It appears that in comparing 1879 with 1870, the prices of all the articles in the list, except twelve, have fallen—a fact which confirms the foregoing statement of Mr. Weston. The exceptions, however, are rather remarkable; pig-iron, sheep, wool and horses being among the number; sheep having advanced nearly eighty per cent., and horses more than one hundred and sixty. The comparison of 1880 with 1879 shows, however, a singularly different result. In sixty-five cases out of the one hundred, prices have advanced ; and in many instances, among which we find again pig-iron, horses and wool, the advance is very great. The

* Weston, *The Silver Question*, p. 70.

† *Idem*, p. 78.

advance in iron extends to nearly all the forms of that metal, including bar-iron, iron rails, boiler plate and sheet and band iron. Rice also, which in 1879 had advanced twenty-two per cent. upon 1870, has advanced additionally fifty per cent. upon 1879. Nearly all sorts of provisions have largely advanced, including all varieties of flour, and both fresh and salted meats. A remarkable example occurs in the price of hops, of which from 1870 to 1879, the advance was seventy-two per cent., and from 1879 to 1880, one hundred and sixty per cent. further.

The resumption in 1879 was therefore, a return to the state of commercial health from a state of commercial disease and threatened decline. It took place in spite of the predictions of the impossibility of effecting it for want of a sufficient gold reserve to make the operation safe. The remonetization of silver was forced upon Congress and the country mainly by the argument that unless we resumed upon silver we could not resume at all. Even Mr. Boutwell, who as a member of the Silver Commission of 1876 dissented from the majority, and argued against remonetization, was cited in the majority report of that Committee as having in his place, in the Senate, "scouted the proposition that it was possible to obtain even \$100,000,000 in gold by the sale of the bonds for resumption or for any other purpose."* Mr. Boutwell it is true, did in the speech referred to, present a pitiable spectacle of the manner in which, as Secretary of the Treasury, he had allowed himself to be dictated to by the bank of England.

"The bank of England," he said, "foreseeing that there would be an accumulation of coin to the credit of the United States which might be taken away bodily in specie, gave notice to the officers of the Treasury Department of the United States that the power of that institution would be arrayed against the whole proceeding, unless we gave a pledge that the coin should not be removed, and that we would invest it in bonds of the United States as they were offered in the markets of London." And then he weakly adds, "we were compelled to comply."

Further on, the ex-Senator continues :—

"There is another fact known to all. We recovered at Geneva

* Report of Monetary Commission, created Aug. 19, 1876, p. 109.

an award against Great Britain of \$15,500,000. When this claim was maturing the banking and commercial classes of Great Britain induced the government to interpose, and by diplomatic arrangements, through the State department here operating on the Treasury department, secured the transfer of securities and thus avoided the transfer of coin. In the presence of these facts, is it to be assumed, for a moment, that we can go into the markets of the world and purchase coin with which we can redeem, four, three, two, or one hundred million outstanding legal-tender notes?"

In reading this, one cannot but ask himself what would have happened, in case these delicate "diplomatic arrangements" had failed, and the President of the United States had intimated that it would be convenient to us to have that small amount in gold. England had assented to the award, and had agreed to pay the money. Would she have refused?

But this talk about not being able to obtain gold for resumption or for any other purpose, is arrant nonsense. Any people or any man can obtain anywhere and at any time all the gold he wants, provided he has either of two important conditions in his favor, viz.: 1st. A perfectly established and unimpeachable credit, or, 2d. The possession of an unlimited amount of commodities which the world must buy or perish. Both these conditions were in our favor, and in spite of croakings from birds of ill-omen in politics, and in spite of the powerful influences exerted to defeat the object, we got the money and we are getting more of it yet—more even than we need, or than it is desirable for us to have, every day.

In spite of the remonetization of silver, we resumed on gold. Remonetization, we were promised, would make silver as good as gold. It has not done it yet and will not do it; but the operation of the existing silver law will compel the Treasury to go on buying and coining this metal indefinitely, till gradual as the process may be, the end will come at last, and there can be but one possible ending—the entire depletion of the Treasury of all its gold, and the replacement of that store by an equal nominal value of silver. Should a bill like the Bland Bill become a law, the process will be no longer gradual. The fall in the value of

money will be precipitous, and the resulting disaster enormous beyond the power of computation. It will be but a slight alleviation of the general gloom to know that a few debtors and mortgageors have escaped the calamity which has befallen the rest of their fellow citizens.

In spite of the fact that the remonetization law of 1878 was undoubtedly passed in the expectation, and with the intention on the part of its authors, that silver should be used under it in the redemption of the legal tenders, it is doubtful whether, in point of law, the United States has any right to tender silver in such redemption. The language of the law makes the silver dollar "a legal tender for all dues public and private." The government is therefore, bound to receive it in all dues payable to itself; but the law of 1873 declared the gold dollar of 25.8 grains nine-tenths fine to be "the unit of value," and the obligation of the United States to pay dollars are obligations to pay such units of value—that is, such coins as the government has itself thus defined to be dollars; and this obligation is not satisfied by the payment of other coins which have not that character, however under compulsion of law, individuals may be obliged to receive them in transactions between themselves.

This question is, however, apart from the object of the present paper, of which the design has been to show that much of the sentimental reasoning which has been thrust into the discussion of the silver question, is fallacious in its assumptions and erroneous in its conclusions. It will also, it is hoped, contribute somewhat to bring to view the impropriety of transforming a great problem of political economy into a controversy about doubtful questions of purely humanitarian interest and practical benevolence.

We certainly have gold enough for our own purposes, and we have had enough for nearly half a century. England has had enough for hers for two centuries. By relinquishing silver we leave the more for those who need it. Suppose the people of New York were to substitute universally the electric light, now growing so popular, in the place of gas. They would leave so much larger an amount of coal for the gas-supply of other cities. Or, to take a more strictly analogous example, suppose the people

of the United States should with one consent abandon the use of wheat as food in favor of some other breadstuff, say Indian corn. Though by doing so they would decelize this grain (if the word is allowable) for themselves, food would be more abundant for the rest of mankind; but in case the price of wheat should therefore fall, we should hardly expect other nations to turn upon us with the complaint that we had made their food cheaper to them. Now, even though we leave silver alone, there are multitudes to whom this metal is almost as much a necessity as their daily food. And among these we must not forget that, besides the semi-civilized millions of the East, there have to be counted also the people of the Austrian Empire in Europe, who still hold to the single silver standard, and those of the Turkish Empire in which coinage is in the ratio of 1:15 ; and which is certain, therefore, if specie payments shall ever there be successfully maintained, to draw silver from all neighboring states; to say nothing of the vast population of Russia among whom the double standard prevails, and who have shown no disposition as yet toward gold monometallism. Moreover, if the Latin Union alone would return to its professed preference, the double standard, the prostration of the silver market would be at once relieved without the need of any help from us. The ills of which the French bimetalists complain, so far as they are occasioned by governmental acts interfering with the coinage, they have brought upon themselves ; and it is entirely in their own power, if they will, to throw them off.

But it is argued that though we may have gold enough now for our purposes, we shall find ourselves pinched in case all the other nations should engage with us in a general scramble for this metal. This danger is entirely imaginary ; but suppose that such scramble should occur, what amount of gold should we need ? It must be remembered that our people make very little use of money in the form of coin. Except for the most trivial transactions, payments are made among us universally either by means of paper representatives of money or by checks drawn on banks. In this respect our habits differ widely from those of any other people under the sun. Our British brethren resemble us in this particular more nearly than any other people on the

other side of the Atlantic ; but even among them no notes are in circulation below the value of five pounds in England, or below one pound in Scotland and Ireland. The consequence is that while, from the official reports transmitted to our government by Mr. Lowell on the monetary condition of the United Kingdom, it appears that the total amount of gold coin and bullion in the kingdom was equal, in May last, to £135,613,000, only £28,739,000 of this was in the banks ; leaving, consequently, in circulation among the people £106,800,000, or more than \$534,000,000. The entire amount of the circulation in the form of bank-notes at the same time was £35,464,047, equal to \$177,320,235.

In the United States it appears, from the report of the director of the mint, that, in October last there was in the treasury and in the banks the sum of \$174,944,791 in gold coin, while there was estimated to be \$200,379,138 in private hands. On the other hand, in paper we had, according to the report of the comptroller of the currency, on the 31st August last, \$697,757,809. Thus our gold coin in the hands of the people was less than two-fifths of that of England, though our population exceeds that of the United Kingdom by nearly 20,000,000, while our paper circulation is about four times as great as that of Great Britain. It appears also that our cash reserve, not counting silver, to secure the redemption of the paper currency, is but about one dollar to four. The cash reserve of England is proportionally larger, but this reserve in the present statement is unusually large ; it is often drawn down to half the amount ; and as it is mainly in the Bank of England, where all the other joint-stock banks and bankers keep their deposits, it is, as Mr. Bagehot has pointed out, the sole guaranty which exists for the safety of British credit.

It appears from the foregoing that the gold coin in circulation among the people in Great Britain is equal to seventeen dollars per head of the entire population ; while that in the United States is but four dollars a head. Also, that the paper circulation in Great Britain is less than six dollars a head, while in the United States it is fourteen dollars per head.

On the Continent of Europe there is scarcely any paper money in circulation, except in countries which have suspended specie

payments. Nor on the Continent is it customary as in England and in the United States, for individuals to keep their money on deposit in banks and to make payments by check. It follows that the need of a Continental people for current coin is immensely greater than that of a population like ours; since they carry upon their persons or keep about their dwellings all the money they can save, while we do nothing of the kind.

This Continental peculiarity has been accounted for, and probably with justice, by the consideration that, for centuries, the Continent of Europe has been the theatre, with intervals of uncertain tranquility, of military operations, in which occupation and spoliation went along together, and treasure accumulated in the vaults of a bank was only so much the more conveniently placed under the hand of the spoiler. Men have been accustomed to feel, therefore, that there is no safety for personal property but that which the individual may be able to provide for himself ; and they, therefore, prefer to keep their money about them.

The Director of the Mint gives for France in November, 1878, the amount of gold in circulation as \$927,000,000 ; besides nearly \$600,000,000 of silver. The population of France is about 36,000,000, which gives about twenty-six dollars of gold and seventeen dollars of silver as the average to each individual. This far exceeds any possible wants of a people like ours.

Unless the habits of our people greatly change, therefore, of which there is no probability, we shall always be able to command gold enough for our purposes. But if it should fall out otherwise, and we should find, in the competition among nations for the possession of the more precious, that our gold is slipping from us, we need not fear that in any event, we shall be left without money. Great as may be the inconvenience attending the change, we may always cast in our lot with the poorer and weaker nations, and accept silver as our medium of exchange and our standard of value. Except for its cumbrousness and lack of portability, silver is as capable of subserving the purposes of money as gold. But this is true only on the supposition that silver in the coinage is estimated at its true value in relation to

other commodities. If an attempt is made by legislation to give to silver coin an artificial value above that which it is able to command as bullion in the markets of the world, and to make it at the same time universally a legal tender, the experiment of a money of silver only will prove a disastrous failure. The reason why, at this time, there is what is called a silver question at all, is that the advocates of silver remonetization are not content with making silver a real money for what it is worth, but demand at the same time that it shall be current for a good deal more than it is worth.

Nor it will be an experiment attended with results any more successful, to attempt to use both silver and gold together, and to make each of the metals interchangeably and equally a standard of value. As neither of the metals preserves unchangeably through long periods of time a constant value in reference to commodities in general, so neither they do preserve a constant relation of value to each other. The bimetallists assert that, in point of fact, a double standard has existed among certain peoples for several centuries ; but the only basis of truth which exists for this assertion is the fact, that laws have existed sanctioning the double standard, while under these laws, and in spite of them, but a single standard has ever existed in point of fact for any appreciable length of time. Under double standard laws, the relation between the commercial values of the metals always has determined and always must determine which shall be the actual standard, the cheaper metal expelling the dearer as effectually as if it had been suppressed by law.

The monetary history of Great Britain for a period of more than four centuries, during which she vainly strove to maintain the double standard, affords conclusive evidence of this truth. The ratio of value between gold and silver was fixed by Edward III. in 1345 at 1:12 $\frac{1}{2}$ nearly. At this rate gold could not be forced into the circulation, and he subsequently changed it to 1:11 $\frac{1}{2}$. Even this proved ineffectual and the same monarch changed the ratio twice additionally before the close of his reign. Henry IV. half a century later fixed the ratio at 1:10 $\frac{1}{2}$, the lowest known to British annals while the policy was adhered to of

endeavoring to conform the legal to the commercial ratio of values. But Henry VIII and his son Edward VI, whose notions of the power of law to create a value where it does not exist, were quite as pronounced as of those of Mr. Henri Cernuschi in our own day, issued a series of decrees, in accordance with which the legal value of the gold and silver in the coinage of England stood related to each other successively as follows:

In 36th Henry VIII.,	Silver was to Gold as	1 : 6 $\frac{2}{11}$
" 37th "	" " " " "	" 1 : 5
" 3d Edward VI,	" " " " "	" 1 : 5 $\frac{6}{13}$
" 4th "	" " " " "	" 1 : 4 $\frac{1}{13}$
" 5th "	" " " " "	" 1 : 2 $\frac{1}{11}$

The consequence of this was of course inevitable. "It followed," says Lord Liverpool, "that all the gold was either hoarded, melted, exported, or in some way driven out of circulation."

Disregarding these extravagancies, however, it may be said that repeated changes were found necessary in the ratio of value between the metals in the coinage down to the accession of George I, early in the eighteenth century, when the struggle to maintain both metals in the coinage was abandoned, and silver ceased to be used in England except for petty retail traffic. The story is worth telling in a little more detail.

During the reigns of James I. and Charles I. this struggle was very energetic. It ceased temporarily to occupy attention under stress of more urgent affairs, during the great rebellion and the Commonwealth. But after the Restoration, and down to the accession of William of Orange, it went on actively, one metal or the other disappearing from circulation after every fresh effort to prevent this annoying result. The two monarchs named above, in addition to employing the natural means of accomplishing their object, that is, endeavoring to conform the legal ratio of values accurately to the commercial ratio, invoked the terrors of the penal law and exercised all the powers of the High Court of Star Chamber to deter men from the grave misdemeanor of melting down coin or carrying it out of the kingdom.

Throughout the greater part of her reign Elizabeth maintained the legal ratio between the metals at 1:11 $\frac{2}{11}$. In her 43d year she changed this to 1:10 $\frac{1}{2}$. Gold was apparently falling, but

directly after the accession of her successor, it took an upward turn which presently caused this metal to be as actively melted up and exported as it had been under Edward VI. In order to check or arrest this evil, the king in his second year diminished the weight of the gold coin by about ten per cent.; reducing the ratio from about 1:11, where Elizabeth had left it, to 1:12. But this not sufficing, in less than five years he reduced it again from 1:12 to 1:13. The total actual rise was in all more than 21 per cent. But in this last advance he overdid the matter, and silver now began to be exported or melted as gold had been before. The sovereigns of diminished weight issued under the first of these changes, in order to distinguish them from those previously coined, were called *unites*, though still rated at 20 shillings. But after the second reduction, to prevent the future exportation of the unites, they were declared to be legal tender for 22 shillings. In consequence of this over-valuation of gold, silver became exceedingly scarce, and very little was brought to the mint for coinage. The king therefore resorted to measures of severity in the hope of stopping the exportation of the precious metals which went on rapidly; and by a proclamation of 1614 setting forth "that great quantities of gold and silver are continually carried forth into forraigne parts, not only for the supply of commerce in respect of the excessse of forraigne commodities (which is a thing itselfe intolerasble), but also upon secret and subtle gaines made at the mints abroad, which artifices as he does not approve, nor much lesse emulate, but is desirous to frustrate," ordered that the statutes made and in force against the exportation of gold or silver in coin, jewels, plate, or vessels, or howsoever, should be strictly executed under the severest penalties. Three years afterward the Privy Council made a curious attempt to control the laws of commercial exchange by issuing an order requiring the East India Company and the Goldsmith's Company to bind themselves under penalties not to pay more for silver than the mint price. In 1618 another proclamation was issued by the king, in which he complained that "the drawing of moneys into the goldsmith's hand, by turning silver into gold upon profit of exchange, doth make it the more ready to be ingrossed into the merchant's hand for transportation to mints abroad," and pre-

hibited the melting down of the gold or silver coin of the realm. Four years later he complained in another proclamation that his previous injunctions had been disregarded, " notwithstanding some remarkable examples of justice in his High Court of Star Chamber," and prohibited the exportation not only of coin but of bullion, and further made it penal to sell gold or silver bullion to any person except "the officers of his Majesty's mint and changes." He also prohibited certain manufactures requiring the use of the precious metals. And later, in 1624, he renewed the prohibition to any person to sell gold or silver "except to the officers of the mint and changes," and ordered that "no refiner sell to any person any manner of silver in mass," and that "no goldsmith sell any fine silver allayed or molten into mass to any person or persons whatever, nor one goldsmith to another."

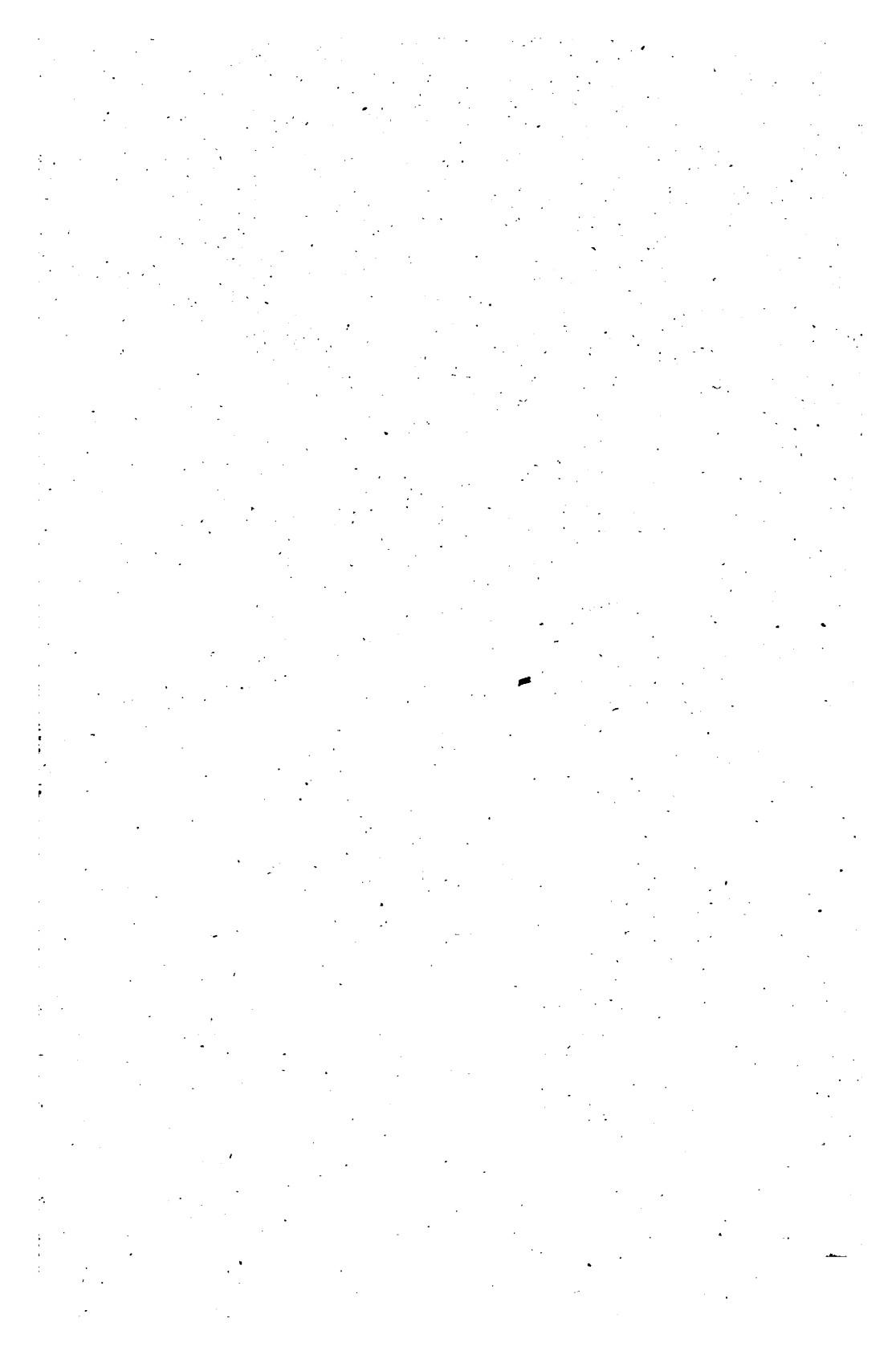
Charles I., after his accession, persisted in the repressive measures employed by his father, and to render them more effectual revived the ancient office of King's Exchanger, appointing the Earl of Holland to fill the same, issuing, at the same time a decree "that no person except the said Earl of Holland should presume to exchange or buy any manner of bullion, in any species of foreign coin or in ingots, or in any other form whatever." In 1636 a decree of the Court of Star Chamber sentenced seven persons convicted of culling out the heavier of the coins of the realm and melting them down and exporting the same, as well as foreign coin and bullion, to foreign parts, to pay £8,100 fine and to be imprisoned in the Fleet till their fines were paid. This kind of traffic is said to have been pursued by certain individuals with a profit of seven or eight thousand pounds per annum. Yet these proclamations were all in vain, and these severities produced no practical effect whatever. Violett, a contemporary writer, states in a public document* that £30,000 in the minor coin of the realm were melted annually by a single goldsmith for six successive years, from 1624 to 1630. The same author adds that throughout all the reign of this monarch, and in defiance of royal menaces and Star Chamber decrees, "silver sold constantly in London at one, two, and three pence per ounce above the

* Violett's proposals to Oliver Cromwell, 1665; cited by Liverpool.

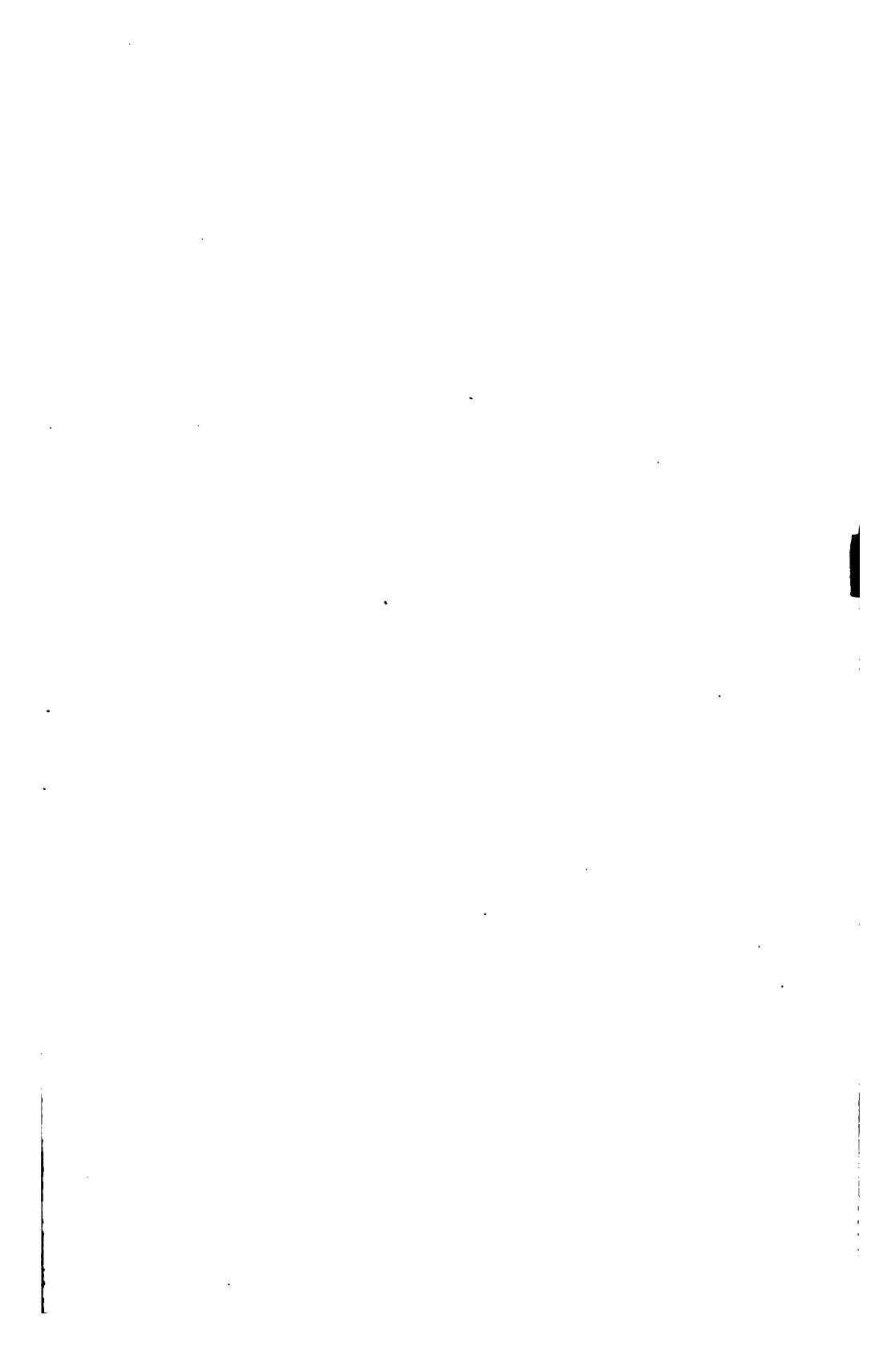
mint price." This was the experience of England under the double standard before the Commonwealth.

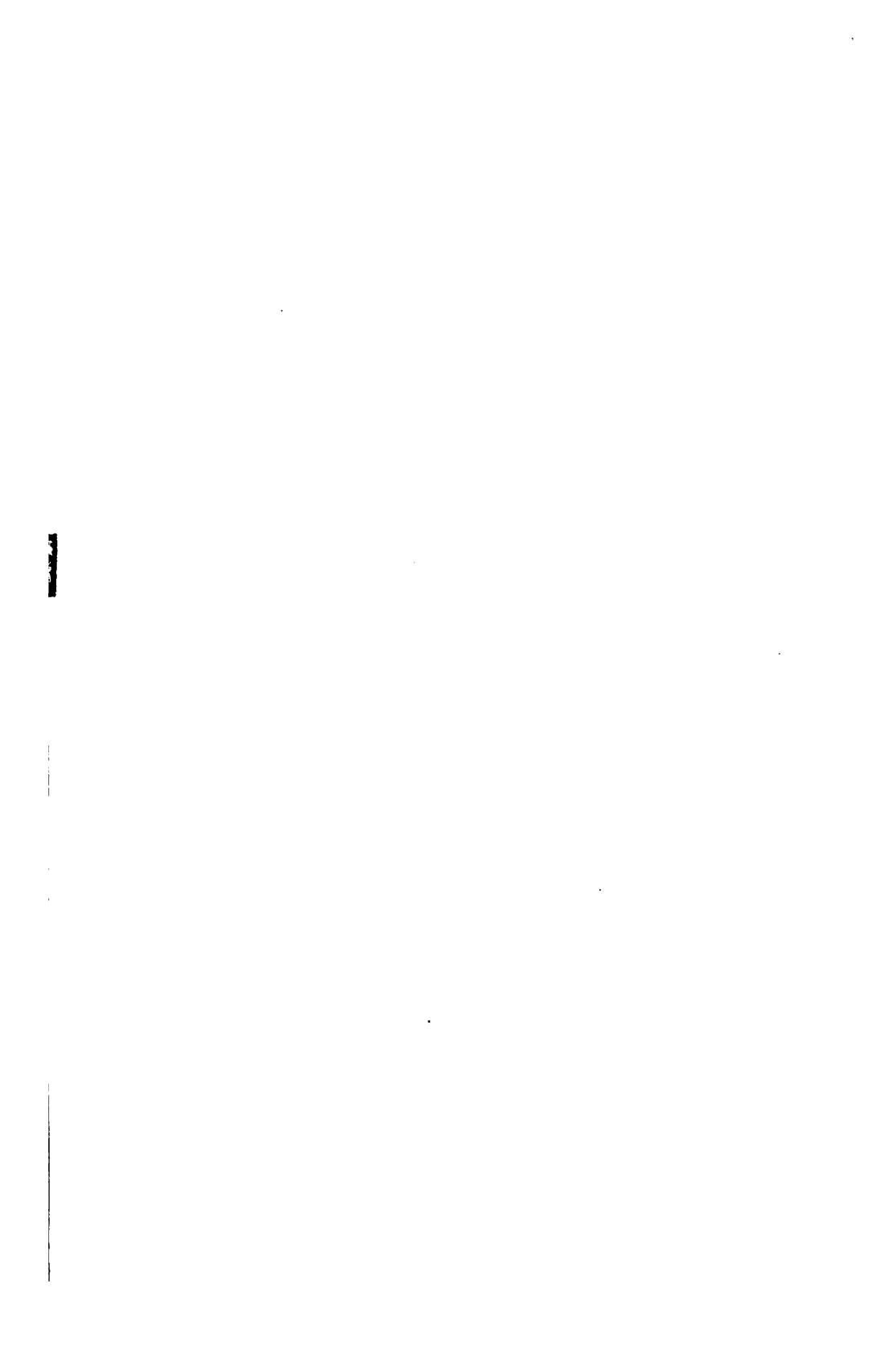
After the restoration, though the struggle to maintain the double standard continued, and though consequently one metal or the other (usually the gold) was constantly driven out of circulation, the people at length, disregarding law, paid and received gold coins according to their actual silver value as bullion, and not according to their legal value, and thus the guineas of Charles II., originally issued at 20 shillings, passed at 21, 22 and more—even finally at not less than thirty shillings. Meantime the silver coinage fell into a deplorable condition, the coins having been clipped and worn until they had lost half their weight, and under William III. a general recoinage took place. At this time the real value of the guinea in the new silver was only 20s. 8d. while it was passing current at 21s. 6d. Its legal tender currency was reduced to 21s., at which it remained fixed. But as this reduction was not sufficient, silver was largely exported and soon ceased to be, what it had been for seven hundred years before, the practical standard of value in England. In 1774 the law at length recognized the impossibility of maintaining two different standards side by side, and silver was made legal tender only for sums not exceeding twenty-five pounds sterling. In 1817 this legal tender limit was reduced to forty shillings, and the silver coinage of England has since consisted only of tokens having a real value materially less than that for which they pass current.

We ourselves have also had a century of experience of the folly of attempting to maintain a double standard. If then silver is to be the money of the future in the United States, let it be the only standard money; let it be coined at its actual value, and let gold be subsidiary or as far as it may be used at all, let it pass as it did in England after the Commonwealth, "according to the current rates."













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